The Plough, the Loom, and the Anvil.

VOL. VII. DECEMBER, 1854. No. 6.

BENEFITS OF FAIRS.

No good thing is useful in one respect only. It is one of the elements of all forms of moral agencies, that each acts in a variety of modes—some direct, some indirect.

Agricultural or Mechanic Fairs belong to this class. That the *tendency* is good, no one now disputes. But the undetermined question is, how to secure the greatest good.

Fairs are useful, in that they collect thousands of people to see and admire better things than they are in the habit of seeing at home. The wheat-grower sees more successful crops; the hay-maker finds that a distant neighbor gets twice as many tons from the same surface that he does; the dairyman finds better butter or cheese than he himself makes; some body exhibits better cows, better swine, etc., etc., than he sees at his own homestead. This excites his ambition, and perhaps, at the next fair he will win the first prize.

Fairs are useful, also, in extending one's personal acquaintance. This not only increases our social enjoyment, but it promotes good citizenship. The discussions sometimes forming part of the exercises, call out most emphatically the thoughts that were buried in the mind, and which existed scarcely more than in embryo. And though those thoughts may be somewhat crude, and unable to bear the tests applied to them, the man returns to his home wiser and more thoughtful than he was before.

But more than this, and than all these, perhaps, is another consideration. The occasion is one with which the individual has a direct personal connection. It is *our* fair, and, to some extent, *our* horses, *our* cattle, *our* crops, and even *our* oration; and as all these are higher and broader and deeper and grander, perhaps, than could be found at the homestead, *its* dimensions may naturally be extended, and its value enhanced, by larger, clearer, loftier views, on the part of the owner or occupant, than had been before entertained. What if the gain be but small at each anniversary? The drops, by and by, will become a huge mass of water. The scattered thoughts, at first exceedingly superficial, will have been matured into a well-digested system. The bookless, thoughtless, thriftless farmer, unknowing and unknown beyond his own few acres, appears as a *practical writer* in agricultural journals, is engaged in important experiments, and has actually discovered very important truths, which he is quite competent to support among his peers. How many such cases, in our own circle of acquaintance, could we enumerate!

This improved farmer is also a better citizen. He better understands the bearing of politics, and of the administration of civil matters upon industrial pursuits. HE HAS A HIGHER ESTIMATE OF LABOR. It is labor skillfully con-

ducted, the combination of head-labor and hand-labor, that has made him what he is. This combination it is which has converted lifeless matter into efficient and tireless workers. The union of these two, the head and the hand, with scientific truth, has devised, created, and adapted to every form of severe labor, not only modern horse-power, but the steam-engine and the water-fall, and, to some extent, other agencies, as electricity and magnetism. One step only from these is the telegraph and the other higher results of scientific discovery. Into this system of mind and progress, the mere laborer of the past has been introduced, and his progress naturally is onward, though with various success. The movement, however, is one—there is no counter current. But for fairs, subscribers to our agricultural journals would have been far less numerous, and the contributors to them would have been almost confined to the occupants of the editorial chair. He who has read agricultural science, has acquired a taste for other science, for reading, and ere long he is comparatively an educated man.

Exaggeration is not our habit, but our whole disposition is set against it. Nor have we herein unduly magnified the claims of these annual convocations. The more this train of thought is considered the more important will it appear. What a vast difference is now visible to all eyes, between the farming interest of thirty or forty years ago, and of the present! We do not say that agricultural exhibitions have wrought out all this, but we have no idea that any such change could be expected without the instrumentality of these appointments. We once saw some five hundred wheelbarrows, busily at work, carrying away the earth and rocks from the spot where the waters now flow which set in motion every spindle in Lowell, and yet we never have supposed that those wheelbarrows spun or wove those tons of fabrics. But they were a part, and an essential part, of the natural, the obvious means by which those ultimate results were attained. Fairs bear the same relation to these other results, these almost entire revolutions in our field labors.

One single process, by which the value of the farming interest has been wonderfully enhanced in many sections of the country, which has been chiefly carried on by the agency (the wheelbarrow) of agricultural societies, is the improvement of farm-yard stock. The importation of foreign animals has been chiefly perhaps, by individuals. But this movement was in many cases prompted by this associated action, and it has been by the management of these societies that the benefits of these animals have been so widely distributed over the country. The actual value of this one movement, though for *want of statistical records, in the absence of agricultural societies*, it can not be accurately stated, must be immense. The national census can not throw much light on this subject, for it is not acknowledged as of competent authority, but it may shadow forth something on this point. Let us turn to it.

The value of neat-cattle in 1840 was about fifteen millions of dollars. In 1850, it was more than eighteen and a quarter of millions. The value of swine has increased quite four millions. So the quantity of the annual crops is increased, and by what instrumentalities, if these societies have not had a material agency?

In determining the best modes of conducting this efficient machinery—for the wheelbarrow has become a great system of wheels, levers, and springs, with numerous attractions and repulsions—regard should be had to all these forms and modes of influence.

It is desirable that all the benefits of such organizations and exhibitions, as far as is possible, should be free. We would have no sentinels on these

grounds, challenging any real inquirer; and even he who visits them from the idlest curiosity, may go home an earnest and an apt scholar. The payment of twenty-five cents admission-fee may or may not hinder the widest spread of this healthful influence. The expediency of such a measure must depend much on the necessities of the society, and the condition of the community. When a train is well under way, small obstacles have no *perceptible* influence in retarding its motion. Perhaps this is strictly analogous to the admission-tax at these yearly gatherings. There is, however, one view in which such arrangements are decidedly unhappy in their effects. He who is doomed to pay for *looking on*, if it be but a sixpence, is an *outsider*, a stranger—a mere visitor. Elsewhere, though a hundred miles from home, he may generally examine and inquire into all such matters without hindrance. But here, in his own county, perhaps his own neighborhood, he must buy the right to see! This is not the way, perhaps, to kindle a desire for participation in such movements, and most surely it is not the way to cultivate a taste for excellence in these departments, nor to identify the spectator with the exhibition. The very men who do not care even twenty-five cents' worth for the whole show, might become most efficient members, and voluntarily subscribe, by and by, as many dollars, to aid its operations.

It may often be wise to locate such exhibitions even in the most uncultivated neighborhoods. Let Mohammed go to the mountain. Let those who have the light carry it to those who sit in darkness, without expecting that night will make effort to overtake the day. Let even personal invitations be addressed to all the people, to come with their households, and enjoy the occasion. This labor would be something, but the result would often be ten-fold and a hundred-fold more. There is magic power in personal courtesies of this sort, however one may theorize about it.

This suggestion is opposed to the idea of *permanence* in location, and would prohibit large outlays for "beautiful grounds" and "extensive exhibition-rooms," and it would hide, too, the *pride*, which is perhaps quite efficient in erecting such structures. At any rate, it would save the cost of building them, and prevent even the thought of large expenditure on what is for *use* only, and that for three or four days out of more than three hundred. Whether this, *on the whole*, would be an evil, is for each one to decide for himself.

The form and the subject-matter of the various reports belonging to such occasions, should be governed by these considerations. They are not, or should not, be designed just to inform the public that A's beans were better than B's, or C's pigs better than D's, which is a matter of very little consequence to the public, but they should add to this the profitable knowledge of the species of bean, the mode of cultivation, etc., the breed of pigs, and the manner of feeding them. So throughout. The report on pigs is often made scarcely more than a jargon of hoggish wit, or of human pedantry. If not thus rationally conducted, all notice of *this* department of *culture* had better be omitted.

But we are not writing an address. We intend nothing but a few hints, which the observation of the present and past years has suggested. We wish some of our readers would take up this subject, and give it a careful and thorough discussion. We have but suggested some of the topics belonging to this department of agricultural improvement.

RAILROAD TO THE PACIFIC.

"THE Great Southern Convention" has had a very earnest, and, in our judgment, a most extraordinary sort of a discussion, in reference to an outside "ultra-Southern" railroad to the Pacific. Some gentlemen presented very clear and sensible views on the subject, and many of them certainly exhibited great ability. We doubt whether any convention of equal numbers, held for many years, could compare with this in point of talent. But with all this ability, the views taken by some of the members are very strangely *ultra* in more senses than one. There seems no disposition among this portion of the convention to secure a road that will build up any other States than those there represented, but rather one that shall be as far South, as *ultra South* as possible. This, we need not say, is all wrong, and what no considerable section of the country will indorse.

One scheme, proposed by Mr. Albert Pike, of Arkansas, a *Northern man by birth*, (and our Northern men are by far the most *ultra* Southern,) and one whom we personally well knew in the place of his nativity, recommended that the Southern and South-western States, fourteen in all, should, by act of Legislatures, grant each the sum of two millions of dollars, and put the road through at once. An act of incorporation from the State of Virginia, making these States an organized company, was contemplated as part of the plan, though how the corporation thus formed were to act was not made to appear. But beside this, "individuals, cities, and the Indian tribes," were to be admitted as stockholders. Whether these cities and tribes were to appear in person, in the corporate meetings, with the other members, the States, was not explained. With some men, no means necessary to carry out their favorite projects are inexpedient or unconstitutional. If ever a plan brimful of absurdities and lawless projects was presented for approval, this is that one. Indeed, while it was under discussion, very few regarded this project with any favor. Gov. Jones, of Tennessee, presented grave objections to it. Mr. N. D. Coleman, of Mississippi, described it as "visionary, utterly impracticable and unmanageable in its details." This gentleman suggested a route in connection with the Vicksburg, Shreveport, and Texas Railroad Company, the charter of which has been granted by the State of Louisiana, with a capital of four millions. His plan, a very sensible one, contemplated a route through Texas, New-Mexico, Sonora, and California, to San Diego, between 32° and 33° of latitude through its entire course. The same views, in respect to the resolution of Mr. Pike, were expressed by Mr. T. A. Marshall, of Mississippi, Judge Nesbit, of Georgia, who regarded it as utterly impracticable and emphatically sectional; by Lieut. Maury, Hon. W. C. Dawson, President of the Convention, etc., etc., and yet the resolution was adopted, by 13 yeas and 0 nays! We can not understand this. The vote was by States. But we would invite especial attention to some remarks of Mr. Dawson, which are reported as follows:

"And here let me suggest that if Great Britain, or any other foreign power, desired to run a railway through any territory of the United States, would we consider that any State, or any government within the limits of such State, would have the right to negotiate for such a purpose? Or I will put the case of any State entering into a contract with any foreign power to build a railroad through their country—do you suppose such power would respect such contract in case of war? Why to suppose it is sheer folly. And supposing that the State making such contract with Great Britain was to violate that contract, and Great Britain was to seek to enforce her rights,

you know what the consequences would be." Hence he urged the propriety of asking of Congress, and not of Congress only, but the treaty-making power—the President and Senate—to negotiate with Mexico for this route. These opinions must commend themselves to every sensible mind. The idea seems to us preposterous, that any foreign state will enter into a contract with a corporate company belonging to a foreign government, for the sale of land two or three hundred miles in extent, through the very heart of the country; and if they did, the contract would be violated whenever the interests of the state seemed to demand it. Should such an event happen, to what could the company resort for redress? They could go nowhere but to the government of their own country, like any other citizens whose property had been unjustly taken from them, and persuade them to undertake to *negotiate*, and on failure of long-continued negotiation, to attempt—we know not what else. It depends very much *on circumstances*, whether our government will take efficient means to redress the wrongs inflicted on our citizens.

This liability to loss would always operate to make such stock unsalable, and the company would experience constant embarrassment in the management of the road.

But there is a strong doubt in our mind, whether a government has a right to grant to foreigners a right of way over the land of individual proprietors without their consent. We know that where the public interests of the state or of the community call for it, property may be taken and used in almost any manner. But this power exists only where the *public interest* demands its exercise, and it would seem to be a tremendous perversion of these terms to claim, on that ground, the right to seize private property to build a road exclusively for the benefit of aliens, and perhaps to the actual detriment of the community through which it passes. In a war, or in any filibustering movement, such roads would be hazardous in the extreme. Many other possibilities, not to say probabilities, will suggest themselves to every reader. Such considerations stamp any such action as reckless and insane. The only practicable mode of effecting such purpose with *foreign corporations*, is through the agency of the treaty-making power, as suggested by Mr. Dawson.

But there is, perhaps, a still better way. And that is, by the plan so common in our country, of securing the longest railroad communications, by means of several corporations, each granted to its own citizens, by its own government, for the public good, with perhaps the power of consolidation. The time is not far distant when the government of Mexico, and of other States between us and the Pacific, will grant charters for such objects, so far as they may be thought beneficial to themselves. This state of things will have arrived long before the tens of millions required for such a road, on the route contended for by Mr. Pike and his associates, will be secured by a *bona-fide* subscription. There is too much hazard to be encountered in the present unsettled condition of the countries through which it would pass, to give currency to any such project.

Mr. Pike speaks of the carrying out of this measure as one "in which the interest of the whole country is involved." We think that whoever builds this road will be public benefactors at the cost of their own pockets. It might be years before it would pay, though, if unmolested, it would become, by and by, no doubt, excellent property. But we do not believe that any one of the routes spoken of is essential to "the interests of the whole country." The public convenience only requires some railroad to the Pacific. We do not think that a departure from an air-line, even though it takes twenty-four or forty-eight hours more in travelling the distance, is fatal to its claim upon the public regard. Whether the Southern, the central, or

the Northern routes shall be preferred, depends chiefly upon their *availability*, to borrow a term of the politicians. Either, when completed, will answer the demands of the "whole country," provided the Western termination shall be such as to meet the business demands of the mercantile world. That one point, the Western terminus, the grades being what they should be, we regard as more important than any one question, or indeed than all other questions, touching the details, combined. Hence we would gladly aid either of these projects, saving only this, that we should prefer that which would unite with its iron bands the greatest number of States, and accommodate the greatest number of citizens and of settlements, thus increasing and multiplying mutual attractions and promoting unity of interest and of action. We think this more important even than the saving of a few hours of travel or a few dollars of expense to the traveller. Labor is not lost that binds together a people, who, like ours, are far too thoughtless of their mutual dependence.

But we do not fear too hasty action. Gentlemen may assemble in convention, and resolve as they please. This is all well, and does good by drawing public attention to the subject. But these very members will not enter into any contracts involving personal responsibility till they see their way clear. Nor will they risk their property in any scheme, when they see that others, having better facilities, will by and by step forward and execute some other plan which shall deprive them of all hope of pecuniary gain. In other words, they will demand reasonable evidence that no rival route shall make their stock comparatively worthless.

VALUABLE STATISTICS.

THROUGH the courtesy of Mr. De Bow, we have received several pages of proof-sheets, in advance of publication, of the agricultural and mechanical productions of the several States, from the census returns of 1850. Some of these we present our readers. The first is Table 186, and contains the amounts of the

AGRICULTURAL PRODUCTS OF THE UNITED STATES—1850 AND 1840.

Agricultural Products.	1850.	1840.	Agricultural Products.	1850.	1840.
Horses,	4,336,719	4,335,669 horses & mules.	Butter, pounds,	313,345,306	.....
Mules and asses	559,331		Cheese, "	105,535,893	.....
Horses, asses, and mules,	4,896,050		Butter and cheese,	418,881,199	* $33,787,098
Milch cows,	6,385,094	.....	Peas and beans, bushels,	9,219,901	.....
Working oxen,	1,700,744	.....	Market gardens,	$5,280,030	$2,691,196
Other cattle,	10,393,069	.....	Nursery products,	.....	$593,534
Total neat-cattle,	18,378,907	14,971,586	Orchard "	$7,723,186	$7,256,904
Sheep,	21,723,220	19,311,374	Beeswax & honey, pounds,	14,853,790	Wax, 628,303
Swine,	30,354,213	25,301,293	Poultry,	.....	9,344,410
Value of live stock,	$544,180,516	.....	Family goods,	$27,493,644	$29,023,380
Value of animals slaughtered,	$111,703,142	.....	Cords of wood,	.....	5,088,891
Wheat, bushels,	100,485,944	84,823,272	Flax-seed, bushels,	562,312	95,251 tons hemp and flax.
Rye, "	14,188,813	18,645,567	Flax, pounds,	7,709,676	
Oats, "	146,584,179	123,071,341	Dew-rotted hemp, tons,	33,194	
Indian corn, bushels,	592,071,104	377,537,875	Water-rotted " "	1,678	
Irish potatoes, "	65,797,896	.....	Maple sugar, pounds,	34,253,436	155,100,809 pounds.
Sweet potatoes, "	38,268,148	.....	Sugar, cane, hogsheads,	237,133	
Total, "	104,066,044	108,298,060	Molasses, gallons,	12,700,991	.....
Barley, "	5,167,015	4,161,504	Cotton, bales,	2,445,793	1,976,198
Buckwheat, "	8,956,912	7,291,743	Rice, pounds,	215,313,497	80,841,422
Hay, tons,	13,838,642	10,248,108	Tobacco, "	199,752,655	219,163,319
Hops, pounds,	3,497,029	1,288,902	Wool, "	52,516,959	35,802,114
Clover-seed, bushels,	488,978	.....	Silk cocoons, pounds,	10,843	61,652
Other grass-seeds, bushels,	416,831	.....	Wine, gallons,	221,249	†124,734

* Dairy products.

† Amounts produced by individuals less than a bale, hogshead, or ton of any agricultural product, where these measures are adopted, are not aggregated or reported. Hence a large production of such articles escaped enumeration. This is important to be observed in reading the county tables.

The following shows the value of the products therein enumerated, being Table 190, and entitled,

VALUE OF THE AGRICULTURAL PRODUCTS OF THE UNITED STATES—1850.

Products.	Value.	Products.	Value.
Indian corn,	$296,035,552	Live stock, over one year old—annual product,	$175,000,000
Wheat,	100,485,944	Animals, slaughtered,	55,000,000
Cotton,	98,603,720	Poultry, on the basis of 1840,	13,000,000
Hay,	96,870,494	Feathers,	2,000,000
Oats,	43,975,253	Milk, (not included in butter and cheese,)	7,000,000
Butter,	50,135,248	Eggs,	5,000,000
Potatoes, Irish,	26,319,158	Cord-wood, on the basis of 1840,	20,000,000
Potatoes, sweet,	19,134,074	Home-made manufactures—one half for agricultural part.—*Tucker*	13,746,822
Wool,	15,755,087	Small crops—basis of Rhode-Island, for onions, carrots, etc.,	5,000,000
Tobacco,	13,982,686	Residuum of crops not consumed by stock. Corn-fodder, cotton, seed, straw, rice-flour, and manure, (Patent Reports,)	1,000,000,000
Cane sugar,	12,378,850	Cattle, sheep, and pigs, under one year old,	50,000,000
Rye,	7,803,847		1,284,288,282
Orchard products,	7,723,186	Add for orchard and garden products of cities, not included in above—milk, butter, poultry, horses, cows, etc., in cities and towns,	15,000,000
Buckwheat,	6,969,838	Total agricultural products—1849-50,	*$1,299,288,282
Peas and beans,	5,762,436	To which add for increase since 1850, and for the greater value of agricultural products, would give total for 1854,	1,600,000,000
Market-garden products,	5,280,030		
Cheese,	5,276,795		
Hemp,	5,247,430		
Rice,	4,000,000		
Barley,	3,616,910		
Molasses,	2,540,179		
Beeswax and honey,	2,375,606		
Clover-seed,	2,344,890		
Maple sugar,	1,712,671		
Hops,	1,223,960		
Flax-seed,	843,468		
Grass-seeds, (other than clover,)	823,662		
Flax,	770,967		
Wine,	442,498		
Silk cocoons,	5,421		

The next shows the comparative population, and the comparative amount of certain specified crops. It is numbered 192, and is entitled,

RATIO PER CENT OF POPULATION AND CERTAIN PRODUCTS IN THE STATES TO THE TOTAL OF THE UNITED STATES.

States and Territories.	Population.	Wheat.	Indian corn.	Rice.	Tobacco.	Cotton.	Wool.	Hemp.	Sugar.
Alabama,	3.33	.29	4.86	1.07	.08	23.08	1.25	.....	.04
Arkansas,	.91	.20	1.50	.03	.11	2.67	.35	.04	.....
California,	.4	.02	.....	.....	.....	.....	.01	.....	.....
Columbia, District of,	.22	.02	.01	.....	.....	.....	.....	.....	.....
Connecticut,	1.6	.04	.33	.....	.63	.....	.95	.....	.....
Delaware,	.39	.48	.53	.....	.....	.....	.11	.....	.....
Florida,	.38	.....	.34	.5	.5	1.85	.4	.....	1.16
Georgia,	3.48	1.08	5.08	18.09	.21	20.41	1.88	.....	.36
Illinois,	3.07	9.37	9.73	.....	.42	.....	4.10	.....	.....
Indiana,	4.26	6.18	8.95	.....	.52	.....	4.97	.....	.....
Iowa,	.83	1.52	1.46	.....	.....	.....	.71	.....	.....
Kentucky,	4.24	2.13	9.91	.....	27.78	.03	4.37	51.01	.....
Louisiana,	2.23	.....	1.73	2.05	.01	7.31	.21	.....	95.31
Maine,	2.51	.29	.3	.....	.....	.....	2.6	.....	.....
Maryland,	2.9	4.47	1.82	.....	10.72	.....	.91	.18	.....
Massachusetts,	4.29	.01	.40	.....	.07	.....	1.11	.....	.....
Michigan,	1.71	4.90	.95	.....	.....	.....	3.91	.....	.....
Mississippi,	2.92	0.14	3.79	1.26	.02	19.80	1.07	.02	.....
Missouri	2.94	2.97	6.12	.....	8.57	.....	3.10	45.96	.....
New-Hampshire,	1.37	.18	.27	.....	.....	.....	2.11	.....	.....
New-Jersey,	2.11	1.60	1.48	.....	.....	.....	.71	.....	.....
New-York,	13.36	13.06	3.03	.....	.04	.....	19.18	.01	.....
North-Carolina,	3.75	2.12	4.72	2.54	6.0	2.07	1.85	.11	.....
Ohio,	8.54	14.42	9.97	.....	5.23	.....	19.41	.43	.....
Pennsylvania,	9.97	15.29	3.35	.....	.46	.....	8.53	.13	.....
Rhode-Island,	.64	.....	.09	.....	.....	.....	.25	.....	.....
South-Carolina,	2.88	1.06	2.75	74.28	.04	12.30	.93	.....	.08
Tennessee,	4.22	1.61	8.83	.12	10.09	7.95	2.60	1.7	.....
Texas,	.92	0.04	1.02	9.04	.03	2.37	.25	.....	3.1
Vermont,	1.35	.53	.34	.....	.....	.....	6.47	.....	.....
Virginia,	6.13	11.96	5.95	.....	28.44	.16	5.45	†.4	.....
Wisconsin,	1.32	4.26	.34	.....	.....	.....	.48	.....	.....
Territ's. Minnesota,	.03	.....	.....	.....	.....	.....	.....	.....	.....
Territ's. New-Mexico,	.27	.19	.06	.....	.....	.....	.06	.....	.....
Territ's. Oregon,	.06	.21	.....	.....	.....	.....	.05	.....	.....
Territ's. Utah,	.05	.10	.....	.....	.....	.....	.03	.....	.....

* Professor Tucker estimated the crop of 1840 at $654,387,597. It was no doubt nearer $800,000,000.

† Crop underrated. In 1852, Virginia reports gave 3450 tons dew-rotted hemp and 1149 tons water-rotted.

We add another, which is numbered 193, and shows the

ACTUAL CROPS PER ACRE ON THE AVERAGE AS RETURNED BY THE MARSHALS FOR 1840–50.

States.	Wheat, bushels.	Rye, bush.	Indian corn, bushels.	Oats, bush.	Rice, lbs.,	Tobacco, lbs.	Seed cotton, lbs.	Peas and beans, bush.	Irish potatoes, bush.	Sweet potatoes, bush.	Barley, bush.	Buckwheat, bushels.	Hay, tons.	Hops, lbs.	Hemp, dew-rotted.	Cane-sugar, lbs.
Alabama,	5	....	15	12	.....	.....	525	12	60	200	....	....	.....	.....	.....	.....
Arkansas,	10	....	22	18	.....	.....	700	....	.....	100	....	....	.....	.....	.....	.....
Connecticut,	....	....	40	21	.....	.....	.....	....	85	....	....	20	.....	.....	.....	.....
Delaware,	11	....	20	20	.....	.....	.....	....	.....	....	....	10	.....	.....	.....	.....
Florida,	15	....	....	....	1,850	.....	250	....	175	....	....	....	.....	.....	.....	750
Georgia,	5	7	16	18	.....	.....	500	5	125	400	....	....	.....	.....	.....	.....
Illinois,	11	14	33	29	.....	.....	.....	....	115	....	40	15	1½	....	.....	.....
Indiana,	12	18	33	20	.....	.....	.....	....	100	....	25	25	1	....	.....	.....
Iowa,	14	....	32	36	.....	.....	.....	....	100	....	....	....	.....	.....	.....	.....
Kentucky,	8	11	24	18	.....	575	.....	....	130	65	....	....	1½	....	650	.....
Louisiana,	....	....	16	....	1,400	.....	550	....	.....	175	....	....	.....	.....	.....	1,000
Maine,	10	11	27	20	.....	.....	.....	....	120	....	20	....	⅜	.....	.....	.....
Maryland,	13	18	23	21	.....	650	.....	....	75	....	....	....	1	....	.....	.....
Massachusetts,	16	13	31	26	.....	.....	.....	....	170	....	21	....	1	....	.....	.....
Michigan,	10	....	32	26	.....	.....	.....	....	140	....	....	14	.....	.....	.....	.....
Mississippi,	9	....	18	12	.....	.....	650	12	105	....	....	....	.....	.....	.....	.....
Missouri,	11	....	34	26	.....	775	.....	....	110	....	....	....	1¼	....	775	.....
New-Hampshire,	11	14	30	30	.....	.....	.....	....	220	....	22	....	1	....	.....	.....
New-Jersey,	11	8	33	26	.....	.....	.....	....	75	....	18	16	.....	.....	.....	.....
New-York,	12	17	27	25	.....	.....	.....	....	100	....	25	22	1⅛	950	....	.....
North-Carolina,	7	15	17	10	.....	.....	.....	....	65	....	....	....	.....	.....	.....	.....
Ohio,	12	25	36	21	.....	730	.....	....	75	....	30	20	1⅛	....	.....	.....
Pennsylvania,	15	14	20	22	.....	.....	.....	....	75	....	....	....	1⅛	....	.....	.....
Rhode-Island,	....	16	....	30	.....	.....	.....	....	100	....	18	....	.....	.....	.....	.....
South-Carolina,	8	....	11	12	1,750	.....	320	18	70	....	....	....	.....	.....	.....	.....
Tennessee,	7	7	21	19	.....	750	300	....	120	....	....	....	.....	.....	.....	.....
Texas,	15	....	20	....	.....	.....	750	....	250	45	....	....	.....	.....	.....	.....
Vermont,	13	20	32	26	.....	.....	.....	20	178	....	....	25	1	....	.....	.....
Virginia,	7	5	18	13	.....	660	.....	....	75	....	....	7	1	....	.....	.....
Wisconsin,	14	....	30	33	.....	.....	.....	....	125	....	18	....	.....	.....	.....	.....

Table 194, which is at least curious, if not useful, entitled,

NUMBER OF COTTON, SUGAR, RICE, TOBACCO, AND HEMP PLANTATIONS.

States.	Number of cotton plantations raising 5 bales and over.	Number of sugar-planters.	Number of rice plantations each raising 20,000 lbs. and over.	No. of tobacco plantations each raising 3000 lbs. and over.	Number of hemp-planters.	States.	Number of cotton plantations raising 5 bales and over.	Number of sugar-planters.	Number of rice plantations each raising 20,000 lbs. and over.	No. of tobacco plantations each raising 3000 lbs. and over.	Number of hemp-planters.
Alabama,	16,100	.....	.....	.....	.....	Missouri,	.....	.....	.....	.....	4,807
Arkansas,	2,175	.....	.....	.....	.....	North-Carolina,	2,827	.....	25	.....	.....
Florida,	990	958	.....	.....	.....	South-Carolina,	11,452	.....	446	.....	.....
Georgia,	14,578	.....	80	.....	.....	Tennessee,	4,043	.....	.....	2,215	.....
Kentucky,	21	.....	.....	5,987	3,520	Texas,	2,262	165	.....	.....	.....
Louisiana,	4,205	1,558	.....	.....	.....	Virginia,	198	.....	.....	5,817	.....
Maryland,	.....	.....	.....	1,726	.....						
Mississippi,	15,110	.....	.....	.....	.....	Total,	74,031	2,681	551	15,745	8,327

There are in the Southern States 74,031 cotton plantations, including all producers of more than five bales; 2681 sugar-planters, including the smallest; 551 estates making more than 20,000 pounds of rough rice each; 15,745 tobacco estates of 3000 pounds each and over in Kentucky, Tennessee, and Virginia; 8327 hemp-planters in Kentucky and Missouri. Only such States are taken as are considered crop States.

The tables numbered 195, 196, and 197, relating to manufactures and mechanic arts, are also presented below. These tables have undergone a few revisions since their first preparation, and are proper to be placed in the present volume. There are 121,855 establishments of every description reported, producing each of any kind of manufactured article the amount annually of five hundred dollars. The capital invested in real and personal

estate is $527,209,193; the value of raw material used, including fuel, $554,655,038; the amount paid for labor, $229,736,377, and the gross annual value produced, $1,013,336,463, making 43 per cent profit upon the whole investment. The ratio of profits in the several States is also given, presenting some anomalies which can not at present be reconciled. Those who will examine the manufacturing returns of 1840 and 1820, will find still greater ones. The figures giving the number of hands employed, and the value of the annual product, are no doubt entirely correct, the chances of error being mainly in the returns of the cost of raw material, and the amount of capital invested. An average profit of 43 per cent would not be too high for the whole industrial operations of the country. The number of hands employed of all ages was 719,479 males and 225,512 females; total, 944,991. The county tables of this volume will show the amount of capital invested, the hands employed, and the total product of every county in the United States. The motive power, as steam, horse, water, etc., was ascertained for each establishment requiring such, but has not been prepared in tabular form. As the examination of the industrial schedules progresses, it is probable many of the figures in the tables will be modified and corrected.

TABLE CXCV.—PRODUCT OF MANUFACTURES, MINING, AND THE MECHANIC ARTS, 1850.

States and Territories.	Individuals and establishment.	Capital.	Raw material used.	Hands empl'd.		Annual wages.	Annual product.*	Per cent profit.
				Male.	Fem.			
Alabama,	1,026	$3,450,606	$2,224,960	4,399	539	$1,106,112	$4,528,878	34.71
Arkansas,	272	324,065	268,564	873	30	169,356	607,436	52.31
California,	1,003	1,006,197	1,201,154	3,964	.....	3,485,820	12,862,522	812.52
Columbia, District of,	395	888,965	1,339,146	1,678	498	616,152	2,493,008	60.49
Connecticut,	3,482	23,890,348	23,589,397	31,287	16,483	11,695,236	45,110,102	41.13
Delaware,	531	2,978,945	2,884,607	3,237	651	936,924	4,649,296	28.46
Florida,	103	547,060	220,611	876	115	199,452	668,335	45.38
Georgia,	1,527	5,460,483	3,404,917	6,660	1,718	1,712,304	7,086,525	36.06
Illinois,	3,164	6,385,387	8,915,173	11,632	433	3,286,249	17,236,073	78.85
Indiana,	4,288	7,941,602	10,214,337	13,677	665	2,809,116	18,922,651	74.28
Iowa,	522	1,202,875	2,356,881	1,687	20	473,016	3,551,783	55.83
Kentucky,	3,609	12,350,734	12,170,225	22,445	1,940	4,764,096	24,588,483	61.97
Louisiana,	1,017	5,318,074	2,958,988	5,581	856	2,086,212	7,320,948	42.79
Maine,	3,977	14,700,452	13,555,806	21,856	6,222	7,502,916	24,664,135	24.52
Maryland,	3,708	14,753,143	17,326,734	22,641	7,483	7,374,672	32,477,702	52.71
Massachusetts,	8,259	83,357,642	85,856,771	96,261	69,677	39,784,116	151,137,145	30.59
Michigan,	1,963	6,534,250	6,105,561	8,930	360	2,387,928	10,976,894	38.01
Mississippi,	877	1,883,420	1,290,271	3,065	108	775,128	2,972,032	49.45
Missouri,	3,029	9,079,695	12,446,738	15,977	873	3,184,764	23,749,265	89.41
New-Hampshire,	3,211	18,242,114	12,745,466	14,103	12,989	6,123,876	23,164,503	23.55
New-Jersey,	4,108	22,184,730	21,992,186	28,549	8,762	9,202,788	39,713,586	38.40
New-York,	23,553	99,904,405	134,655,674	147,737	51,612	49,131,000	237,597,249	53.86
North-Carolina,	2,604	7,252,225	4,805,463	10,693	1,751	1,796,748	9,111,245	34.60
Ohio,	10,622	29,019,538	34,677,937	47,054	4,435	13,467,660	62,647,259	49.97
Pennsylvania,	21,605	94,473,810	87,206,377	124,688	22,078	37,163,232	155,044,910	32.47
Rhode-Island,	853	12,923,176	13,183,889	12,837	8,044	5,008,656	22,093,258	30.18
South-Carolina,	1,431	6,056,865	2,809,534	5,935	1,074	1,128,432	7,063,513	51.60
Tennessee,	2,861	6,975,279	4,900,952	11,154	878	2,277,228	9,728,438	36.56
Texas,	309	539,290	394,642	1,042	24	322,368	1,165,538	83.17
Vermont,	1,849	5,001,377	4,172,552	6,894	1,551	2,202,348	8,570,920	43.91
Virginia,	4,741	18,109,993	18,103,433	25,789	3,320	5,413,764	29,705,387	34.17
Wisconsin,	1,262	3,382,148	5,414,931	5,798	291	1,712,496	9,293,068	64.00
Territ's. Minnesota,	5	94,000	24,000	63	.....	21,420	57,500	12.85
Territ's. New-Mexico,	23	68,300	110,220	81	.....	20,772	249,010	172.79
Territ's. Oregon,	52	843,600	809,560	285	32	388,620	2,236,640	123.10
Territ's. Utah,	14	44,400	337,381	51	.....	5,400	291,220	†
Total,	121,855	527,209,193	554,655,038	719,479	225,512	229,736,377	1,013,336,463	43.43
New-England States,	21,631	158,115,109	153,103,881	183,238	114,966	72,317,148	274,740,063	31.19
Middle "	53,900	235,183,998	265,384,722	228,530	91,084	104,424,768	471,975,751	43.44
Southern "	10,406	37,426,626	20,343,958	49,953	7,978	10,250,700	53,635,005	37.51
South-west "	6,362	18,440,734	12,038,377	26,114	2,435	6,736,404	26,323,276	40.93
North-west "	29,536	78,042,726	94,784,098	131,644	9,049	36,007,357	186,662,368	71.59
Non-slavehold'g "	93,815	431,290,351	467,125,253	577,434	203,654	195,872,665	845,430,428	51.57
Slaveholding "	28,040	95,918,842	87,529,785	142,045	21,858	33,863,712	167,906,035	48.49

* Exclusive of those in families. † A loss of 116.13 per cent.

TABLE CXCVI.—COTTON MANUFACTURES, 1850.*

States, etc.	Establishments.	Capital.	Raw material used.			Hands empl'd.		Average wages per month.		Prod'ts.†
			Bales of cotton.	Tons of coal.	Value of raw material.	Male.	Fem.	Male.	Fem.	
Alabama,	12	$651,900	5,208	.....	$237,081	346	369	$11 71	$7 98	$382,260
Arkansas,	3	16,500	170	.....	8,975	13	18	14 61	5 88	16,637
Columbia, Dist. of,	1	85,000	960	.....	67,000	41	103	14 02	8 00	100,000
Connecticut,	128	4,219,100	39,483	2,866	2,500,062	2,708	3,478	19 08	11 80	4,257,522
Delaware,	12	460,100	4,730	1,920	312,068	413	425	15 31	11 58	538,439
Florida,	.....	80,000	600	.....	30,000	28	67	32 14	5 00	49,920
Georgia,	35	1,736,156	20,230	1,000	900,419	873	1,399	14 57	7 39	2,135,044
Indiana,	2	43,000	675	300	28,220	38	57	13 02	6 77	44,200
Kentucky,	8	239,000	3,760	720	180,907	181	221	14 95	9 36	273,439
Maine,	12	3,229,700	31,531	2,921	1,573,110	780	2,959	29 35	12 15	2,596,356
Maryland,	24	2,236,000	23,325	2,212	1,165,579	1,008	2,014	15 42	9 48	2,120,504
Massachusetts,	213	28,455,630	223,607	46,545	11,289,309	9,293	19,437	22 90	13 60	19,712,461
Mississippi,	2	38,000	430	.....	21,500	19	17	14 21	5 94	30,500
Missouri,	2	102,000	2,160	1,658	86,446	75	80	10 93	10 00	142,900
New-Hampshire,	44	10,950,500	83,026	7,679	4,839,429	2,911	9,211	26 00	13 47	8,830,619
New-Jersey,	21	1,483,500	14,437	4,467	666,645	616	1,096	17 98	9 56	1,109,524
New-York,	86	4,176,920	37,778	1,539	1,985,973	2,632	3,688	18 32	9 68	3,591,989
North-Carolina,	28	1,058,800	13,617	.....	531,903	442	1,177	11 65	6 13	831,342
Ohio,	8	297,000	4,270	2,152	237,050	132	269	16 59	9 42	394,700
Pennsylvania,	208	4,528,925	44,162	24,189	3,152,530	3,564	4,099	17 85	9 91	5,322,262
Rhode-Island,	158	6,675,000	50,713	13,116	3,484,579	4,959	5,916	18 60	12 95	6,447,120
South-Carolina,	18	857,200	9,929	.....	295,971	399	620	13 94	8 30	748,338
Tennessee,	33	669,600	6,411	3,010	297,500	310	581	10 94	6 42	510,624
Vermont,	9	202,500	2,243	.....	114,415	94	147	15 53	12 65	196,100
Virginia,	27	1,908 900	17,785	4,805	828,375	1,275	1,688	10 18	6 98	1,486,384
Total,	1,094	74,500,931	641,240	121,099	34,835,056	33,150	59,136	.....	.....	61,869,184

TABLE CXCVII.—WOOLLEN MANUFACTURES, 1850.

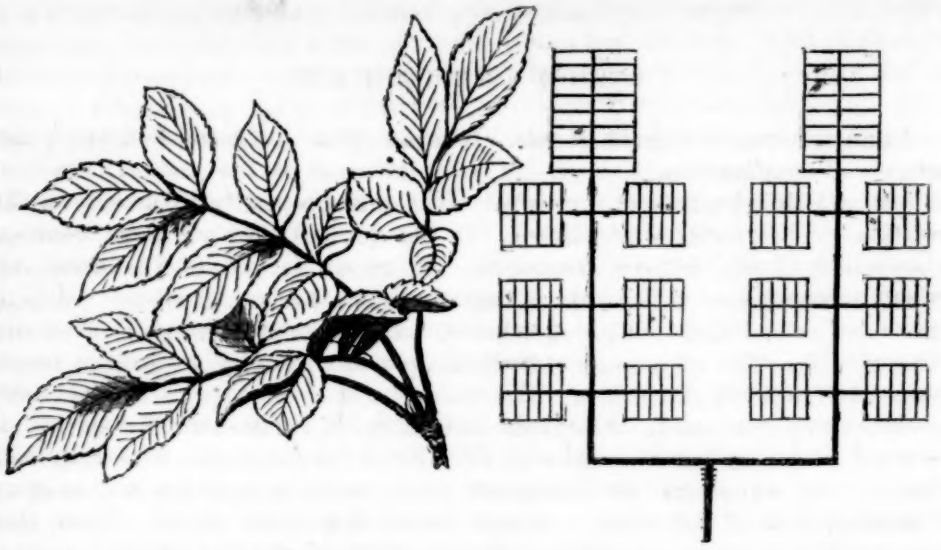
States, etc.	Establishments.	Capital.	Raw material used.			Hands empl'd.		Average wages per month.		Prod'ts.‡
			Pounds of wool.	Tons of coal.	Value of raw material.	Male.	Fem.	Male.	Fem.	
Columbia, Dist. of,	1	$700	5,000	.....	$1,630	2	.....	$30 00	.....	$2,400
Connecticut,	149	3,773,950	9,414,100	7,912	3,325,709	2,907	2,581	24 12	12 86	6,465,216
Delaware,	8	148,500	393,000	45	204,172	122	18	18 79	17 33	251,000
Georgia,	3	68,000	153,816	.....	30,392	40	38	27 47	14 10	88,750
Illinois,	16	154,500	396,964	987	115,367	124	54	22 00	12 52	206,572
Indiana,	33	171,545	413,350	90	120,486	189	57	21 81	11 05	205,803
Iowa,	1	10,000	14,500	.....	3,500	7	.....	11 14	.....	13,000
Kentucky,	25	249,820	673,900	.....	205,287	256	62	15 30	11 11	318,819
Maine,	36	467,600	1,438,434	.....	495,940	310	314	22 57	11 77	753,300
Maryland,	38	244,000	430,300	100	165,568	262	100	18 60	11 89	295,140
Massachusetts,	119	9,089,342	22,229,952	15,400	8,671,671	6,167	4,963	22 95	14 22	12,760,565
Michigan,	15	94,000	162,250	.....	43,402	78	51	21 65	11 47	90,242
Missouri,	1	20,000	80,000	1,071	18,000	15	10	32 00	6 50	56,000
New-Hampshire,	61	2,437,700	3,604,103	3,600	1,267,329	926	1,201	22 86	14 53	2,127,745
New-Jersey,	41	494,271	1,510,289	1,889	548,367	411	487	25 22	8 60	1,164,446
New-York,	249	4,459,370	12,538,786	.....	3,838,292	4,262	2,412	19 97	11 76	7,930,604
North-Carolina,	1	18,000	30,000	.....	13,940	15	15	18 00	7 00	23,750
Ohio,	130	870,220	1,657,726	2,110	578,423	903	298	20 14	10 90	1,101,027
Pennsylvania,	380	3,035,064	7,560,379	10,777	3,282,718	3,490	2,236	19 23	10 41	5,321,866
Rhode-Island,	45	1,013,000	4,103,370	2,032	1,463,900	987	771	20 70	15 18	2,381,825
Tennessee,	4	10,900	6,200	.....	1,675	15	2	17 66	6 00	6,310
Texas,	1	8,000	30,000	.....	10,000	4	4	20 00	20 00	15,000
Vermont,	72	886,300	2,328,100	.....	830,684	683	710	24 46	11 81	1,579,161
Virginia,	121	362,640	1,554,110	357	488,899	478	190	18 17	9 91	841,013
Wisconsin,	9	31,225	134,200	.....	33,630	25	.....	22 48	.....	87,992
Total,	1,559	28,118,650	70,862,829	46,370	25,755,991	22,678	26,574	.....	.....	43,207,545

* In these tables, the States which report no product will be omitted.
† 763,678,407 yards sheeting, etc., were produced, and nearly 30,000,000 lbs. yarn and batting.
‡ 52,206,652 yards cloth were manufactured, 4,294,336 lbs. of yarn, beside blankets and hats.

ARCHITECTURE.

ARCHITECTURE is a great science. It is not great in the sense in which the science of mathematics is great, but in its influence on the comfort, the condition, and the character of a people. This influence extends through all the relations of life, social and political. It has a moral and religious bearing, also, which should not be overlooked. If we would properly estimate the relative importance of this subject, we must give it a careful study. But to know and to feel that it is great, requires but a moment's thought. Note, for example, the effect of a huge cathedral upon the mind of a traveller unaccustomed to such structures. The narrative of every foreign tourist bears testimony on this point. Nor is the influence felt by the stranger alone. It is novel with him, but it is real with all. Send the thousands who daily visit those grand structures for devotional purposes, to some diminutive country "meeting-house," and what a change would come over them! Then, *they* too would appreciate something of the extent of this mighty power. But we need not go to ecclesiastical structures for witnesses. Who has not felt the social influence of a *bow-window*, with its drapery, behind which two or more may retreat and enjoy a more exclusive style of entertainment than is afforded in the thronged drawing-room? We are not here descending to trifles, and venture another example, of kindred nature. The good old-fashioned fireplace, with its cheerful blaze, now alas! is expelled from many a homestead in these Northern States, and its place supplied (oh! how miserably!) by a furnace in the cellar. What a vacancy is here produced! The charms of "the fireside"—the almost sacred sympathies of the "social hearth"—all these household gods are taken from us, and not even the semblance of a substitute is provided. Instead of collecting around the cheerful fire, the members of the family disperse, like a scattered fold, to such retreats as promise the best protection. Each contrives to find some object by which to fix himself, very much with the same feeling as one searches for a hook on which to secure a horse who may otherwise, through mere discontent or impatience, wander he knows not where. But it is not our purpose, just now, to follow along this path, as other thoughts have prior claims upon us.

The forms of the objects we constantly gaze upon act very powerfully upon our æsthetic natures. That some powerfully excite our sympathies, is obvious. Who has not looked for the thousandth time, and with at least undiminished delight, upon some lofty tower or tall church-spire? But no one will take the trouble to turn his head toward a low, rectangular, barn-like structure. Set a whole school to drawing figures upon their slates, for amusement, and how many will construct a mere rectangular figure? Not one. All select more complex forms, or more varied, or at least more tasteful outlines. And this is not accident, nor education, nor proof of skill, nor of the want of it. It is nature. Nowhere in all her dominions, does she exhibit special regard for such shapes. With the exception of a very limited number of crystallized salts, no such forms are to be found in all her realm. In the animal and vegetable world there is no such example. Imagine the leaves of trees to be of this shape, and how utterly is the beauty of the landscape annihilated, and with it all its kindly influence! Look at these diagrams, which we copy from Ruskin, used by him for illustrating a kindred thought, and note the contrast between the two forms, and we shall not probably be charged with extravagance in what we have written:



But does our shrubbery affect us more powerfully than do our homes? Do fields and meadows exercise greater influence over us than our parlors, our bed-chambers, our nurseries, and our school-rooms? These scenes are constantly before us, are ever present with us, and are ever exerting an influence upon us, to add to or take from our comfort. Who ever doubted the effect of familiarity with good paintings, in forming our tastes? Even the character and styles of our chimney ornaments are not without effect, particularly upon those whose tastes and preferences are yet "unformed."

The effect of personal deformities is readily appreciated. The presence of such is, in itself, always offensive. But in the sum total, these effects are comparatively unimportant, for two reasons. Deformed persons are comparatively rare, and therefore produce little pain, on the whole. Beside, they often charm us by their remarkable qualities of head or of heart, and we believe this to be, not the exception, but the rule. This is one of those cases of compensation so common in the administration of a kind Providence. But there is no such compensation in a deformed dwelling, a graceless structure. This is vice unqualified, plainly obvious, ever before us, and if so familiar as not positively to offend, it is because our own tastes are so debased that they harmonize with those deformities. We have often been reminded of these ideas, by seeing the crowds gathered round the windows of our picture-shops. They have excited a greater interest in us than have the pictures themselves. We have thought that it argued well for the uneducated classes, that they were alive to such an influence. But we are disposed to vary the expression, and to prove from this fact that our very nature is so constructed as to be powerfully affected by such exhibitions. This is a quality which does not belong to the educated, nor the matured, not to the simple nor the unlearned, alone, but to all, of all ages and of all conditions. This fact is too important to be overlooked.

But there are certain anomalies existing in many communities, which can not be explained without careful investigation. For example:

New England is, in some respects, the glory of this country. It abounds in thriving villages, built up by means of successful application to the arts. Mechanical skill and industry have produced these results. But go through many of these villages—the very rewards of skill in art, the medals with which industry honors her votaries—and in every house you see but a mag-

nified box, or case for merchandise, clap-boarded and painted, having a top slightly inclined so as to shed water. The interior is as destitute of good taste as the exterior. The straight walls, rectangular in every feature, are pierced with numerous rectangular openings for windows, with rectangular frames and rectangular doors, both of which are usually in bad taste, in form, number, size, and position.

Our second diagram is a perfect type of the villages. The staring white surface of the walls of the houses is only broken by *very green* window-blinds. Why all this is so, as already suggested, is not to be explained, without thought, in one short sentence. If it was economy, or poverty, which induced it, we should have something to offer in mitigation of the wrong. But economy and good taste may harmonize, and often do, in much less pretending structures.

Lest some one should be disposed to ridicule this matter, as of only trifling concern, let us test the truth of our claim by another reference to the natural world. Suppose all our bold mountains were carefully moulded into uniform blocks of rectangular shape—or all were reduced to a level plain; all our water-falls were annihilated, and our running brooks mere rectangular collections of still, lifeless water—what a change would be produced! How many odes and sonnets, and bucolics and pastorals would be written? How would a square moon strike your fancy? But the Author of creation knew better than to fashion such a world. True there are extensive plains, and wide regions of country, where all is reduced, essentially, to the condition described. And what sort of intellects are reared there? Who, under such circumstances, has exhibited a gigantic mind, or a fervid imagination? Who has there erected beautiful fancies, or breathed sweet sonnets? Even the ballad germinates best in Scottish highlands. The lands most eminent for the beautiful in literature, are the lands famous for their structures and their natural scenery. The one or the other may be regarded as cause or effect; they are, in fact, coëxistent.

We verily believe that if our school-rooms were constructed and furnished after the model of a tasteful parlor, the change would exert a most happy influence upon the mind, the taste, and the manners of the young, and would go further in improving the face of society, than do the ferrule and the rod, and all our systems of police. Some progress has been made in this respect, and not without great gain. What better than the manners of the stable can be reasonably expected from a school-room no better than a stable?

We therefore invite attention to this subject in all its branches and departments. It is not the school-boy only who is under such influences. We all are subject to them. He is in an unhappy condition who can not feel their power. We invite discussions on this topic, and will furnish the necessary illustrations. We purpose to do what we can, with propriety, as opportunity will permit.

NORTH-CAROLINA AGRICULTURAL SOCIETY.

Among the many excellent addresses at our Annual Fairs the present season, we have seen few that were so full of valuable thoughts as one delivered before this Society, by Hon. Kenneth Raynor. It was their second anniversary. We are happy to find place for the following extracts:

"When we reflect that the object of our association is to enlarge the field of operation for labor, to secure to labor the rewards of its toil, to stimulate it to still greater exertions, and enable it to accomplish the greatest results of economizing its powers, it is evident that the effect must be to dignify, honor, and elevate labor. It is the laborer, especially, that we invite and welcome to our brotherhood. In our own country, above all others, it must be destined soonest to reach its proper position. Our institutionsr ecognize no distinctions in industrial pursuits. The road to honor, to wealth, to power is open to all alike. The framers of our institutions were true to the teachings of a past history. Not only the soldiers who fought our revolutionary battles, but many of their heroic leaders were laboring men, artisans, and mechanics. Washington was a land-surveyor, Greene was a blacksmith, Wayne was a laboring farmer, Morgan was a wagon-driver. Our government, then, in its organic structure, has done for labor all it could. It is for voluntary association, then, to elevate labor in the social scale.

I am pandering to no spirit of political socialism when I say, that I have long thought society needed a radical reformation in regard to the estimate placed on labor. Why should the laboring man be excluded from the saloons of fashion, the hospitable board of the wealthy, the companionship of the great? I mean merely *because* he is a laboring man?

Why is it that the young man who returns home from college with an education secured by the economical savings of an industrious father, thinks it beneath his dignity to assist that father in the routine of his domestic occupations? Or the young lady, whose "accomplishments" have been paid for by the self-denial of an indulgent mother, thinks it a reproach to aid that mother in the discharge of the duties of a diligent housewife? It is because public opinion is all wrong in associating labor with degradation. Why is this? Labor is the first great law of nature. Nature herself is a great workshop where change, renovation, and development are constantly going on.

* * * I wish not to be misunderstood. It is not to be expected or desired that intellect shall fraternize with ignorance, or virtue with vice. A natural incongruity forbids such association. Public opinion needs no reformation in this respect. But the reformation which is needed, and which we are led to hope, is silently working its way, is this—that the pursuits of honest labor shall no longer be a bar to the highest social position; and a stimulus thus given to the laboring man for the cultivation of his intellect, and development of the common good, of mental resources that might otherwise remain dormant; and by holding out to him the rewards of virtue, the paths of vice and dissipation may be shunned. These annual festivals of agricultural and mechanical industry are working a powerful though imperceptible moral influence in this respect. For the time being, they break down all the artificial barriers with which man has hedged in his lordly self. Our honors and rewards are to the most worthy. *Honor digniori* should be our motto. We have no use for drones in our hive. Industry and labor are the elements of our success. If we are to effect any thing for the good of our country, or the welfare of our fellow-men, it must be through the agency of these great sources of human good. * * *

I might insist on the necessity of manure, as a means of restoring and improving the soil; and on this point, I presume I should have less misgiving and prejudice to encounter, than on any other. This was, no doubt, the first movement ever made in agricultural science; and for thousands of years, continued to be the only one. The luxuriant vegetation following the accidental incorporation of manure with the soil, suggested itself to the senses

without the procress of rational deduction. The importance of manure, as necessary to vigor of growth, and a sure return in fruit-time, comes down to us sanctified by the moral teaching of the parable. The life of the barren fig-tree was besought and spared for one year, till man should do his duty, in applying to it the elements of fertility. The present condition of England, where in the last hundred years, the average of the wheat crop has been increased from an average of 12 to one of 24 bushels per acre, and, in many districts, to 50 or 60 bushels—of Massachusetts, when a soil, naturally barren and rugged, has been so subdued and improved as to support one of the most wealthy and powerful communities on the earth—afford a more eloquent and convincing argument in favor of carefully preserving and restoring to the soil the elements of manure, than language can utter or pen can write. As to the best means of preparing it and method of applying it—that belongs rather to the laboratory of the chemist, than the rostrum of the orator.

I might dilate on the importance of lime, which both theory and experience have established to be the great basis of all permanent agricultural improvements: but why attempt this, when the immortal work of Ruffin, one of the great public benefactors of his time, on the calcareous manures has in a plain and practical style unfolded, not only treasures of knowledge, but mines of wealth, the existence of which were not dreamed of a few years since.

And so in regard to the entire catalogue of all branches of agricultural knowledge; if I were to presume to give instruction, I should fall far short of what may be obtained in any good agricultural journal, or the countless works of standard authority, which are daily issuing from the press, in supply of the demand for agricultural knowledge.

It is not the difficulty of obtaining information, that is the bar to our progress. It is the difficulty of removing long cherished prejudice and ancient habit of appreciating the wonderful progress in industrial enterprise that is in operation in the world around us, of awaking to the importance of availing ourselves of the vast stores of knowledge that science and experience, are daily bringing to light; arousing a laudable ambition among our people to enlist as competitors in the great race of progressive improvement—these are all that is necessary to make our State one of the most prosperous, wealthy, and happy communities on earth."

HOW RAILROADS INCREASE WEALTH.

Inasmuch as at the present time there exists quite an outcry against some of the railroad enterprises of the day, we copy the following from a late number of the Cincinnati *Railroad Record*, with the object of showing the influence of railways, and the increase of capital and the facilities of commerce:

Railway investments in Ohio, - - - -	$50,000,000
Market value, - - - - - - - - -	35,000,000
Increased value of lands, - - - - -	51,000,000
Annual gain in transportation $7,000,000, which is interest on. - - - - - - - -	
Annual gain in interest $1,000'000, which is interest on, - - - - - - - -	100,000,000 15,000,000
Aggregate value, - - - - - -	$201,000,000

Deduct the original cost, and we have a clear gain of capital to the extent of 151 millions of dollars. Mr. Mansfield, the editor, thus comments:

"Try this estimate by any other test that can be applied, and it will be found to be within limits. Take, for example, the valuation of the State. In three years three hundred millions have been added to the assessments of the State, and the assessments are under valuation. Take Cincinnati as an example. In five years her commerce has doubled. What has done it? Her bank capital is constantly diminishing, and her rates of interest are enormous. What has sustained her? But for the extension of her trade through the interior, by railways, the tyranny of legislation and the equally bad municipal management would almost have crushed her. The vastly enlarged facilities for trade, and also of manufactures, have borne her triumphant through the conflict. Whence, then, originates the absurd idea, that railways have absorbed commercial capital? Railways alone have saved the commercial community from bankruptcy. Whence, then, comes this cry? This is it—Railways as well as increased currency have immensely increased the business of the country. Hence, more money is required for a greatly enlarged business. Then extravagance, to a most foolish extent, has taken possession of the wealthy classes, and that demands money. Then comes a pressure. There is overtrading, export of specie, high rates of interest, and some failures. Some body must be blamed. Who? The most prominent, active, and public body is a railway, and he is charged with doing too much. It is the old Jack Cade cry of put down the men with the ink-horns, because they can write; and arrest the progress of railways, because they make too much business! When you cease to make railways, the goose that laid the golden egg will be killed."

MEMPHIS: HER ENTERPRISE AND RAILWAYS.

At a public dinner given by all parties to Mr. Prentice, of the *Louisville Journal*, this talented editor, in his speech, made the following happy remarks on the subject of our title:

"In public spirit and enterprise, I regard Memphis as a model city. There is no city in the Union, there is no city in the world, that understands her own interests better, or that prosecutes them with more boldness, energy, and success. She has made heavy appropriations for railroads, and she has made them judiciously. I said that the future of parties is uncertain, but the future of Memphis is not. Let her continue to be true to herself, as she has been true, and a magnificent destiny is before her. She will be the equal of any city in all the West and South in population, in wealth, and in whatever constitutes a city's greatness and prosperity. Her Charleston railroad, her Grenada railroad, her Louisville railroad, and her Arkansas railroad, for all of which she has made liberal appropriations, will pour a greater abundance of wealth into her lap than if they were so many great navigable rivers, all laving her borders. Rivers in these days, except for purposes of heavy transportation, are getting to be little else than old fogies. In more senses than one, they are all going down hill. They have been running all their lives, but the railroad-cars can beat them out of sight, even at that game. As for our Ohio, generally known as the beautiful river, if it is not more useful hereafter than it has been for some time past, instead of asking an appro-

priation from Congress to clear it out, we may ask one to fill it up. It wouldn't take much. The fact is, the Ohio, just now, is not worth a fiftieth part as much as the ground under it would be if free of the fluid encumbrance. Your Mississippi has a big reputation, but when in coming last week from St. Louis to your city, our boat grounded repeatedly each day, and had to lie by each night for want of water, I began to suspect that the great father of rivers, though he sometimes swells prodigiously, isn't much better than some of his shallow children.

Talking, like travelling on the Ohio River, is rather dry work, gentlemen; but before I sit down I wish to say one word in especial reference to your projected Arkansas railroad. My mind was strongly directed to that project some months ago by my friend, Mr. Stickney, and having come to your city with the leading contractor for the work, my attention has of late been particularly called to it. In common with many of you, I listened with delighted interest, a few evenings ago, to the able and practical speech of that contractor. I feel, of course, the deepest interest in your connection with my own city, yet I can not but see that your contemplated road to Little Rock is to you the most important of all your noble railroad enterprises. Your city is the terminus of the Memphis & Charleston Railroad, the terminus of the Memphis & Grenada Railroad, and the terminus of the Memphis & Louisville Railroad. The Arkansas Railroad is the Western outlet and inlet of all these. At the St. Francis it becomes the depot of the whole region drained by that river. Forty-five miles further west it crosses White River, which, with its tributaries, drains a country equal in extent to Western and Middle-Tennessee. Extend it to Little Rock, and the whole of the immense valley of the Arkansas is at your door. Thus this road will attract to your city an amount of travel, trade, and population that will make your holders of real estate millionaires, your merchants merchant-princes, and all your men of business men of fortune. It will be to Memphis a source of greater wealth than if it were a stream running like the fabled Pactolus over sands of gold."

MECHANIC ARTS AT LOUISVILLE, KY.

THE annual address at the Mechanic Institute of this thriving city was delivered by Mr. Ben. Cassidy. Among many most excellent things uttered are the following. We commend them, as, indeed, the whole address, to universal notice.

"Louisville needs only to have publicity given to her advantages—needs only to employ the simple means which the experience of her sister cities has taught her—not only to attract to her thousands of emigrants from abroad and thousands of capitalists and adventurers from other parts of our own country, but also to place her present capacities as a manufacturing mart in the front rank among cities. These statements so little accord with the commonly-received opinion of our citizens that they may well create surprise. But the well-known story of yonder card of cow-bells will serve to illustrate the fact that none are so ignorant of our own productive capacity as we ourselves.

An order for a large number of these bells was received by one of our most prominent merchants from some friend in New-York, with the remark appended that the Louisville bells were the finest-toned and best-finished in the coun-

try, far exceeding any which could be found in the East. The merchant was inclined at first to regard the order as either a blunder or a hoax on the part of his correspondent, and for several days he laughed over it with his friends. And a considerable time elapsed before, by dint of industrious search, or, some assert, by accident, he was enabled at last to find the factory and hand over the order.

This little circumstance has alone given publicity in Louisville to a branch of manufacture which had long been known and was highly regarded in New-York.

Does there exist in the Union or in the world another city of which such a story can be told? Do you see the waters of yonder fountain, leaping and flashing in the light of the chandelier, and do you know that the exhibitors of that beautiful work and the adjacent iron-work are daily presenting the public with the largest variety and best-constructed architectural castings in the Western country, if not in the United States? Do you see yonder case of edge-tools, and do you know that your own workmen use them in preference to the manufactures of Sheffield? The beautiful enamel-work of those grates and of that vase—do you know that it is produced in and sold from Louisville?

Yonder profuse display of agricultural implements—are you aware that they proceed from a factory only surpassed in extent by one, and not surpassed in facilities or in completeness by any in the country; and that that factory is on Eighth street in this city? Yonder is a whole room devoted to the display of musical instruments, two thirds of which are of domestic manufacture. I might go on pointing out object after object in this room with similar commendation; and I might instance new branches of manufacture which have been put into operation since the closing of last year's fair: but I have said enough to show that it is not capacity in which Louisville wanting. It is policy, publicity, *puffery*, if you will.

A man may sit in a obscure alley offering pearls at two-pence a-piece, and yet find no purchaser; but if the same man were known to have pearls for sale at reasonable prices under the shade of a rock in the desert, caravans would be formed and companies would go to buy his wares. So it is with the manufacturer. His wares may be ever so good, his prices ever so reasonable, but unless he employs proper means of making them known to the public, he can not expect appreciation."

THIRD POMOLOGICAL CONGRESS.

The American Pomological Society has just been holding its third session in Boston. The Society was formed in Washington four years ago, and held its second session in Philadelphia in 1852. Its name denotes its general object, which is to foster the fruits of the earth, particularly those of the orchard and the garden. There were assembled delegates from twelve States of the Union, extending from Maine to Florida, and also one or two horticulturists from Old England. There were discussions upon the cultivation of the pear, and quite a number of pears upon our list were voted unfit for cultivation. A pear called the Lawrence pear, that originated a few years ago on Long-Island, was highly recommended. The varieties of apples, peaches, and plums also had their turn. The opening address was by Marshall P. Wilder, Pre-

sident of the Association, in which he spoke of the importance of our having varieties of fruit adapted to our soil and climate—on the arts of cultivation, the systems of pruning, and the preservation and ripening of fruit. A few of his words upon soils are below:

"The influence of soils is remarkable. But by those we do not mean the identical spot, the artificial bed in which the tree stands; for in time the roots take a wide range in search of food. Some fruits are good in nearly all places; others, only in their original locality. Some succeed best on light, loamy, or sandy soils; others in stiff, clayey. In the latter, many pears—for instance, the Beurre Bosc and Napoleon, are astringent, while in the former they are entirely free from this quality. The Beurre Ranee, in England, and in some parts of France, is the best late pear. So it is, also, in some parts of Belgium, while with others, and with us, it is generally inferior.

The flavor of fruit is much influenced, not only by soil but also by climate and meteorological agents. Thus, in a cold, wet, and undrained soil, disease commences in the root; and as a natural consequence, the juices of the tree are imperfectly elaborated, and unable to supply the exigency of the fruit. Even injurious substances are taken up. A plum-tree has been known to absorb oxide of iron, so as not only to color the foliage, but also to exude and form incrustations on the bark, and finally to kill the tree. As an instance of climatic agency, it is sufficient to report the fact that out of fifty varieties of American peaches grown in the gardens at Chiswick, England, only two were adapted to the climate."

In reference to pears on quince-stocks, or dwarf pear-trees, Mr. Barry, of New-York, the able editor of the *Horticulturist*, remarked as follows:

"He had seen it stated in several newspaper paragraphs, that the cultivation of the pear on quince-stocks had proved to be a failure. He regretted to have such statements sent abroad. They are not correct. He considered it a great blessing to the country, that pears could be cultivated on quince-stocks, because it enabled thousands upon thousands of our citizens to enjoy delicious varieties of fruit years earlier than they otherwise could. Perhaps the best way to check this erroneous impression would be for the Society to recommend a list of pears that succeed best on quince-stocks. He had prepared a brief list of sorts, and would submit it for the consideration of the meeting. All the pears enumerated were not, indeed, of the best quality, but they have been successfully proved on the quince. Before giving the list, he would say that the best quince-stocks were the Fontenay and another variety. The common apple or orange-quince of this country is not a suitable stock for budding. It may grow well for one or two years, but will ultimately fail.

Pears for cultivation on quince-stocks: Rostiezer, Beurre d'Anjou, Beurre Diel, Duchess d'Angouleme, White Doyenne, Louise Bonne de Jersey, Fig d'Alençon, Urbaniste, Easter Beurre, Glout Morceau, Pound, Catillac, Vicar of Winkfield, Napoleon, Beurre d'Amalis, Beurre d'Aremberg, Soldat Labourer, Beurre Laugeleir, Long Green of Cox, Nouveau Poiteau, and St. Michel Archange."

The list was adopted by the Society.

This national association of fruit-growers, coming together every other year, and comparing their experiences, and spreading them broadcast over the country, with no other object than the production of the best fruits, must have a most important effect, in a few years more, upon the pomology of the United States.

AGRICULTURAL EDUCATION IN OHIO.

We rejoice at any demonstration of an interest in agricultural science. Hence we are happy to extend the circulation of the following announcement found in one of our exchanges:

Ohio Agricultural College at Oberlin.—The first term of this College will commence on the first Monday of December, and continue three months. The object is to place within the reach of farmers, both old and young, the means of acquiring a thorough and practical acquaintance with all those branches of science which have direct relations to agriculture.

It is proposed to give courses of lectures during the winter months on all the several departments of agricultural science, each principal division being assigned to a different lecturer, and systematically presented in the same manner as medical science is taught in medical colleges. The branches taught will embrace whatever pertains to animals, vegetables, land, or labor.

LECTURES.

James Dascomb, M.D., Chemistry in all its appliances to Soils, Manures, Animal and Vegetable Life, and the Domestic Arts, etc. This department is regarded as especially important, and means have been provided for its thorough illustration.

Norton S. Townsend, M.D., Comparative Anatomy and Physiology, with special reference to the feeding and breeding of Stock; History and Description of Domestic Animals in their several varieties; Veterinary Medicine and Surgery; Entomology. This department will be illustrated by preparations and specimens, and by the practice before the class of such operations as are necessary to be performed by the keeper of stock.

John S. Newberry, M.D., Geology and Mineralogy; Botany, Descriptive and Physiological, with special reference to the history and habitudes of all plants cultivated in the Garden and Orchard, or in the Field—the various modes of culture, and soils adapted to each. This department will be illustrated by specimens of all the varieties of grains, fruits, and other vegetable products of interest to the Farmer, Gardener, or Orchardist.

James H. Fairchild, A.M., Natural Philosophy, Agricultural Mechanics, Farm Implements, Meteorology, Elements of Engineering and Land Surveying, Rural Architecture, Landscape Gardening, and Farm Book-Keeping. Philosophical apparatus, implements, models, plans, drawings, etc., will be abundantly provided, to aid the lecturer in this department.

The lectures will commence on the first Monday in December, and continue three months.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

DROUGHT IN HAWKINS COUNTY, TENN.

Messrs. Editors: It is well known to every reader in the United States, that, in the South and West, crops of all staple commodities are shorter this season than they have been for many years. *Cause*, the drought. Corn, the leading cereal of the Union, it is supposed, is less by one third the quantity grown last year, in all the South and West. In East-Tennessee, also, it is the same. Wheat is neither so good or abundant as last year. The crops of oats are better. So of the hay-crop; and this is unaccountable; but the

hay, as a general thing, is better in quality and quantity than the crop of last year. The root-crop is poor. Potatoes, turnips, ruta-bagas, beets, etc., are all small and few. The drought continues up to this writing. The waters are all at the lowest known ebb, and grinding is quite an object even in this celebrated water-power country. Notwithstanding this, clover-pastures and the various grazing-grounds are yet well clad with a good coat of foilage, and our forests are rich with acorns, nuts, etc., all aiding the sad failure in crops. If there should be a mild winter, no inconvenience may be felt from the drought of the summer. Prices of grains are about twenty-five per cent higher now than at this time last year; pork about the same, the driving on foot, to markets in Virginia and the Carolinas, from this country, will not be so extensive as formerly; but it is believed that bacon this year will be more abundant, which may not, however, rule prices low, on account of transportation; indeed, in justice, this year the farmer should have a better price for his products, to correspond to the high prices he has to pay for all his necessaries and luxuries on sale in the stores of East-Tennessee. These, it is presumed, have advanced fully one fourth, or twenty-five per cent, since last year. Our good old county of Hawkins, honoring the cognomen of one of the Senators, Commissioners of our own State from North-Carolina, I would say, cultivated about twenty thousand acres of land, from which her farmers sell in surplus of the foregoing-named articles, about five dollars per acre annually; the prime quantity, however, is enjoyed by her hardy, healthy population, in raising stock, etc., and a proportion in raising up for the country the most reliable generation of girls and boys in all the Union. They will be found so, in peace and in war; in peace, hospitable, kind, generous, and social; in war, chivalric and daring. The county covers about three hundred and fifty square miles of good arable land, scarcely any of it less susceptible of cultivation than the cultivated portions of New-England. Lately, vast mines of copper, zinc, lead, etc., have been discovered imbedded in her bosom. Hawkins County could support and employ profitably, and make wealthy, ten times the population she has. "*Qui primus venerit, primas tenebit.*"

A. L. B.

Mill Bend, Tenn., Nov. 1, 1854.

GRAPE CULTURE AND WINE MANUFACTURE IN OHIO.

THE *Cincinnati Gazette* contains a long and interesting article on the grape culture and wine mauufacture in that vicinity. It appears that in 1846 there were 83 vineyards in the neighborhood of Cincinnati, containing 248 acres under cultivation, and 114 bearing, and although the crop the preceding year was but a partial one, 24,0000 gallons was the yield. In 1852, 1200 acres were in cultivation, 750 bearing; the annual yield was supposed to be 500,000 gallons, and the value of sparkling wine alone $175,000. A bushel of grapes will make from 3 to 3½ gallons of juice. Mr. Buchanan commenced planting his vineyard in 1843; in 1850 from three acres he realized, beside the cuttings, 1640 gallons wine. In 1853 he obtained from five acres 4326 gallons, or 847 gallons per acre. In particular spots there have been obtained 800 gallons from an acre, but 650 gallons is considered a large yield. The demand for Catawba wine is far ahead of the supply, and the quality is constantly being improved, both by the cultivators and those who prepare it for market.

RUMINATION

THE following article from the *Genesee Farmer* clearly and briefly describes this mysterious process. It also explains the importance of fully incorporating *all the grain* that is fed to stock in the form of fine meal with the coarse food. It has been found by those who have fed crushed corn and cob in a dry state, as many are in the habit of doing, that its effect is injurious to the intestines of the animal, beside the great loss sustained by feeding it in that state. Animals fed on meal, bran, or "brewers' grains and distillers' wash" will not long remain in a healthy condition. All the important organs adapted to the process of rumination remain inactive and dormant and must finally result in disease and the death of the animal, but not so when these substances are incorporated in the coarser food:

"*Rumination* is the re-mastication of food by a ruminant animal. Liquid or attenuated food passes at once into the third and fourth stomachs, and is not re-masticated; but all other food, particularly such as consists of comparatively dry and solid vegetable matter, descends into the rumen, is there slowly macerated, passes by little and little into the second stomach, and is there separated by compression into a liquid and a solid portion—the liquid to pass on to the third and the fourth stomachs, and the solid to be returned in pellets up to the gullet for such re-mastication as shall reduce it to a pulp, and fit it to pass direct, by re-deglutition, into the third and the fourth stomachs. The re-mastication is effected while the animal lies at ease, and constitutes what is popularly called 'chewing the cud' and takes place only upon matter which nothing short of an operose process can reduce to perfect pulpiness or liquidity; and the regorging which attends it differs widely from the belching or vomiting of a non-ruminant animal, and is as regularly conducted by a specially constituted organism as deglutition or absorption or secretion or any other ordinary act or function of the animal system.

In order to understand the process of rumination, we must advert to the manner in which the four stomachs communicate with the gullet, and with one another. The gullet is an extensive membranous tube, much more complicated in ruminating quadrupeds than in man, the muscles which surround it being strong, and consisting of two rows of fibres, crossing one another, and running spirally in oposite directions; and these muscles, by their contractions, so powerfully force the morsel of food begun to be swallowed onward into the inlet of the stomachs, that the process of deglutition once commenced can not be stopped, even by the will of the animal. The gullet enters just where the first, second, and third stomachs approach one another, and discharges itself almost equally into the first and second. Connected with it is another organ which may be termed the cud-duct. This is sometimes a groove and sometimes a tube, according to its action; and runs from the termination of the gullet to the third stomach, with the first stomach on the left, and the second on the right, and discharges itself almost equally into the second and the third. It has thick prominent margins, which can be brought to meet so as to form a complete canal, and thus constitute a continuation of the gullet across the second stomach into the third. All these parts, the gullet, the cud-duct, the first, the second, and the third stomachs, not only communicate with one another, but all communicate by a common point, the point where the gullet terminates, where the cud-duct commences, and toward which the three stomachs open or end. Now, in the process of returning the macerated

food for re-mastication, it is the cud-duct, together with the shut termination of the gullet approached to the shut inlet of the manyplies, which forms the pellets. To understand the mechanism by which these are moulded, let it be marked, first, that the cud-duct extends from the termination of the gullet to the inlet of the manyplies; secondly, that, when it contracts, it approaches one or the other of these apertures; thirdly, that of these two apertures, the termination of the gullet is habitually shut, and the inlet of the manyplies, naturally straight, can be so narrowed as almost to close by its own contraction; and, fourthly, that when the first two stomachs, compressed by the abdominal muscles and the midriff, contract, they push in consequence the materials which they contain both against the two apertures opposite to each other, and against the cud-duct opposite the two stomachs. The two stomachs, in this manner, in proportion as they contract, push the materials contained in them between the margins of the cud-duct, and the cud-duct also contracting, causes the two apertures of the gullet and of the manyplies to approach, while the two apertures being closed and brought near together, seize upon a portion of the aliment, and detach it in the form of a pellet. The aperture of the gullet is closed during the act of detaching the pellet, because at that instant the midriff is contracted, and it only opens when the midriff is relaxed; and the aperture of the manyplies is closed, because at that instant the manyplies, as well as other stomachs, is contracted. From these circumstances it is obvious that the pellet must be detached, as it could not otherwise be seized by the two approaching apertures—that the pellet must be round, for this is the form of the cavity formed by the parts of the organ employed in the process—and that the pellet must be about an inch in diameter, for the cud-duct, when contracted in the act of forming the pellet, is about an inch in length. How beautiful a contrivance—how exquisitely adapted to the structure and wants of the animal—and how minutely and highly illustrative of the all-pervading beneficence and skill which everywhere shine out in the works of the Creator!

One important practical lesson suggested by the nature of rumination is the proper feeding of cows, in order to produce the greatest quantity of milk. If they are fed on very dry food, such as hay, the greater portion of fluids in the blood will be spent in the process of rumination and digestion, and the milk will be scanty; but if they be fed on aliment which abounds in liquid, such as mangel wurtzel or brewers' grains, and distillers' wash, as in Holland, they will ruminate much less; a quantity of saliva will be wanted for chewing the cud, and a large proportion will go to the production of milk, though this will be thinner, and not so rich in cream as the milk produced from drier food. It is questionable whether cows fed wholly on distillers' wash would ruminate at all any more than calves, which, so long as they suck, never ruminate.

Another important practical lesson has reference to the giving of medicines, and is stated as follows by Clater: "We may, to a great extent, send medicine into what stomach we please. We may give it in a ball, and it will fall into the paunch, and thence go the round of all the stomachs; or it may be exhibited in a fluid form, and gently poured down, and the greater part of it passed at once into the third and fourth stomachs. That which is meant to have a speedy action on the constitution or the disease should be given in a fluid form. That also which is particularly disagreeable should be thus given, otherwise it will enter the paunch and be returned again in the process of rumination, and disgust the animal, and perhaps cause rumination to cease at once. This would always be a dangerous thing, for the

food retained in the paunch would soon begin to ferment, and become a new source of irritation and disease."

A third important practical lesson has reference to the sweating of the domestic ruminants, particularly sheep. Sweat is the production of the fluid portion of the blood, or arises from the same source as the salivary secretion employed in rumination; and hence the flow of it is more to be dreaded in ruminating animals than in others, inasmuch as it greatly diminishes the supply of fluid which ought to be employed in rumination. If sheep are sweating while they ruminate, there will be two evacuations of fluid at the same time, the body will be dried, and the blood exhausted and heated by the loss, while thirst will supervene, so as to make them drink till they are incommoded and their temperament altered. Sweating is also hurtful to sheep in other respects, for the fibres of their wool are thereby deprived of a part of their nourishment, which the sweat carries out of their body, while the heat which occasions the sweat causes the wool to grow too rapidly to acquire sufficient consistence."

TO RAISE GIANT ASPARAGUS.

A WRITER in one of the early volumes of the *Horticulturist* tells us how to grow common asparagus so that it will always rival any giant production. He says:

"Every one who has seen my beds has begged me for the seed—thinking it a new sort—but I have pointed to the manure heap—(the farmer's best bank)—and told them that the secret all laid there. The sight was only such as might be seen in every garden.

About the first of November, as soon as the frost has well blackened the asparagus tops, I take the scythe and mow all down close to the surface of the bed; let it lie a day or two, then set fire to the heap of stalks, burn it to ashes, and spread the ashes over the bed.

I then go to my barn-yard; I take a load of clean, fresh stable manure, and add thereto half a bushel of hen-dung; turning over and mixing the whole together throughout. This makes a pretty powerful compost. I apply one such load to every twenty feet in length of my asparagus beds which are six feet wide. With a strong three-pronged spud or fork I dig this dressing under. The whole is now left for the winter.

In the spring, as early as possible, I turn the top of the bed over lightly once more. Now, as the asparagus grows naturally on the side of the ocean, and loves salt water, I give it an unusual supply of its favorite condiment. I cover the surface of the bed about a quarter of an inch thick with fine packing salt; it is not too much. As the spring rains come down, it gradually dissolves. Not a weed will appear during the whole season. Every thing else, pigweed, purslin, all refused to grow on top of my asparagus beds. But it would do your eyes good to see the strong, stout, tender stalks of the plant itself push up through the surface early in the season. I do not at all stretch a point when I say that they are as large around as my hoe-handle, and as tender and succulent as any I ever tasted. The same round of treatment is given to my bed every year."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

HOPS IN LAMOILLE COUNTY, VT.

MESSRS. EDITORS: When the hop was in blossom, about the 16th of July, the crop looked very unpromising. Many thought they would not be worth harvesting. The 22d July, we had a shower that wet the earth one inch, and about the same quantity the 6th August, which gave the hops a remarkable start. The growers estimate a half crop.

There are in Hyde-Park 110 persons engaged in hop-culture the present year. The quantity raised is 75 tons; price, 22 to 30 cents; average, 26 cents; which makes about $40,000 received by our farmers for this one article.

The hop is grown the present year in nearly every town in our county. The Inspector estimates the amount of money paid for this article in the county to amount to $100,000.

Several of our growers last spring, sold hop-roots to the amount of $100. This article has contributed more to the independence of our yeomanry than any other branch of agriculture. Many who ten years since were quite poor, are now above want. ARIEL HUNTON.

Hyde-Park, Nov. 22, 1854.

SUCCULENT FOOD FOR MILCH-COWS, ETC.

WE think our farmers greatly mistake in feeding cattle, and especially milch-cows, with dry feed. We may philosophize as we will, but facts seem to warrant the conclusion, that succulent feed is more nutritious than dry feed and an extra amount of water. This we believe is the explanation (if it can be called explanation) of the fact that carrots, pumpkins, etc., are so useful as feed during the winter months. We have often referred to this subject, and now confirm the views already presented by the following experiments, taken from two or three exchanges. They strengthen us in the opinion that roots ought to be cultivated far more extensively than they are. The first is from the *Maine Farmer.*

RAISING CARROTS.—MR. EDITOR: I have noticed in your paper, lately, several articles on raising carrots, which induce me to give you an account of what I have done in that way this season. I have gathered 220 bushels of yellow carrots from forty rods of land, that will weigh 4½ tons, or 18 tons to the acre, and making 880 bushels per acre, which I think is not a bad crop for a farmer to raise. I have sold about 2½ tons, at $20 per ton, by carting about three miles. ZEBA BLISS.

Auburn, Me., Nov., 1854.

Then follows another statement from the same sheet, as below:

VALUE OF CARROTS FOR MILCH-COWS.—MESSRS. EDITORS: I have tried feeding carrots to milch-cows, and will give you one of my experiments. I have (April 15) seven cows in milk; one calved in June, the rest in September and October. I raised eighty bushels ruta-bagas and four hundred bushels carrots, and fed them to my cows, commencing the first of December.

I gave them about 2½ bushels per day, at noon, the ruta-bagas first, and when they were all fed out, the same quantity of carrots. I found, when I had fed the latter a few days, that my cows were each giving from two to three pints of milk more per day than when fed on ruta-bagas. I was feeding my cows, meanwhile, with cut-hay, and 2 lbs. oil-cake and meal, and 2½ lbs. wheat-screenings, ground. The thought struck me that I should like to know the value of carrots for making milk; so I selected the cow that calved last for the trial. I weighed the hay, meal, and carrots, and fed perhaps 20 lbs. of hay, 4½ lbs. of mixed meal, and 22 lbs. of carrots, and she gave 35 lbs. of milk per day. I then left off the carrots and gave the same amount of meal, and all the hay she would eat, which was 33 lbs. per day. After feeding so for a week, I found she gave 23 lbs. of milk per day. I then gave her the carrots as before, and in eight or ten days she came up again to 35 lbs. of milk per day.

This shows that carrots are worth to me to feed cows, 82 cents per 100 lbs. Hay is worth $20 per ton in the barn, and at three cents per quart, or one cent per pound, for milk, 6 lbs. less hay, and 12 lbs. more milk, gives 18 cents for 22 lbs. of carrots. Next winter I hope to have another opportunity for experiment.—*Rural New-Yorker.*

Another writer in the *Germantown Telegraph* recommends pumpkins, and for the same reason. He says:

"I cut my pumpkins into eighths, and then submit them to the operation of the 'rasper,' and a better feed for most animals than they make I do not want. The process is a summary one, and the pumpkin is presented in a condition which might well tempt the human palate. In the winter, mixed with chaffed hay, or refuse-matter of any sort, and a little cob-meal, it makes a most grateful feed, and one that all animals devour with the keenest avidity. Apples, rasped in the same way, are also much liked by stock If sweet, very little other food will be required, sweet apples being very alimentary, and very salutary in their effects upon the animal system—especially upon cows in milk, causing a healthy action on the secretory glands, and consequently causing a copious and sustained flow of the richest milk.

One great reason why there is so frequent and general a failure of the lactescent product during the winter months, is the privation of succulent aliment which these animals are subjected to. In very many, perhaps in a majority of cases, the only food they receive from the time they are taken from the pasture, until they return to it again the subsequent spring, is dry hay, or stalks; no roots are given them, because their owners don't think roots worth raising, and if they are allowed an occasional feed of meal or unground grain, it is given to them *dry*, without any previous preparation, not even so much as a moistening of water being allowed. Now, this is a perversion of all reason, and as directly opposed to the obvious requirements of nature as any thing well can be. Let a man be confined during a period of eight months to dry biscuit, with only an occasional flagon of spring-water, and that half of the time of poor quality, and what suppose you, Mr. Editor, would be his condition at the end of the term? Would not the privation of succulent food operate injuriously upon both the fluids and solids of his system? It appears reasonable to suppose it would. Now, what is the legitimate inference in the case of the cow or other domestic animals? Every one can answer."

The same sentiments are expressed in the following from the *New-England Farmer:*

"If you desire your cows to yield liberally to the pail, you must feed them

with something better suited to the secretion of rich milk than *dry* provender. Chopped roots, or meal-slops of some kind, should be given them twice a day, at least, say morning and evening. They should also be provided with littered beds, dry lodgings—moderately warm; be regularly watered thrice each day, just before being fed; be curried or combed once a day, and salt, with occasionally a little ashes or fine bone-dust mixed, two or three times a week. They also like a *variety* of food. Roots, cut or rasped, and mixed with cut-hay or stray, then stirred and left for an hour or two, make a mess which they will eat very greedily. We think that hardly attention enough is given to the *bedding* of cows, as the more quiet and comfortable they are, the less food will be required to sustain the system, and may therefore go to produce flesh or milk. A gentleman who has constantly employed several pairs of working oxen for many years, states that oxen will travel fifteen miles a day, being well 'littered down' at night, as easy as twelve miles and lie upon the bare floor. If this statement be correct—and it seems to us consistent—it is a pretty important matter that all our cattle are well provided for in this respect."

DISEASES OF THE UDDER AND TEATS IN COWS.

The subjoined cases of disease, injury, and obstruction in the teats and udder of cows will furnish useful hints to many agriculturists and graziers, and are likely to be of interest to all our readers. They are taken from a paper, with title as above, in the *Veterinarian* for September, (an English publication by Mr. W. A. Cartwright, a veterinary surgeon of high reputation.)

Case 1.—*Obstruction in a Cow's Teat.*—In 1831, I was called to attend a cow, the property of Mr. Tudmam, of Yoking's Gate, near this town, that had calved a week ago, and had borne two calves before. There was an obstruction up one of the teats, and the udder was very much distended with milk. I merely introduced a knitting-needle up it for about two inches, and broke down two different pieces of coagulum or membrane that crossed it, and the milk could be immediately drawn off, and she did well without any further trouble.

Case 2.—*Injury to a Cow's Teat.*—17th of September, 1845, Mr. G-ratt, timber merchant of this town, had a cow that had just met with an injury to one of her teats, in having a little of the end of it cut off slantwise. Although we fomented the parts, bled her, and repeatedly passed the silver milk-tube up it, yet she became "gargated," and lost her quarter.

When the teat is injured, we scarcely ever do any good. At first, the milk becomes obstructed in the teat, and, by the introduction of the tube, the teat and, ultimately, the udder become inflamed. Then scarcely any milk flows, and what comes is frequently bloody; but soon it entirely ceases. Now only some scrum can be drawn out, and soon this ceases. Next, pus forms, and which sometimes comes out in clots; at others it is tolerably liquid; and if it can not be well got out, the udder hardens in places, and abscesses form, and now the udder is completely destroyed for secreting milk, and she is completely "gargated."

In April, 1846, this same teat again became highly inflamed and swollen, and pus formed within it. I inserted caustic lints in its orifice, which was nearly closed up; a slough come out, and the pus discharged well. Abscesses afterward formed in the udder, which (the abscesses) ultimately got well, but the udder became scirrhous.

Case 3.—*Obstruction in a Cow's Teat.*—April 17, 1844, was sent for to attend a cow that had calved yesterday; no milk could be got out of the anterior off-teat. On examining it, I found that at about an inch and a half up it there was a thickening for about half an inch in length of the lining membrane, and no doubt the sides of which were united, and the passage was completely obstructed. I first passed a probe, and forced it through, after which I passed a silver tube up it, and then the milk ran freely and relieved the udder.

On the 18th and 19th, I introduced the tube pretty easily, and the milk ran through it readily, and I was in hopes that the tumor, a "thunk," as it is called about here, in the passage would become absorbed. Some of the milk could be drawn by the hand after the tube was removed.

20th.—I introduced the tube again, but no milk came out. The teat was sore, and from the orifice a little blood oozed out. To be left alone.

21st.—The teat and udder were much sorer, and the orifice was closed up and swollen, and a little blood oozed out. With some little trouble, I again introduced the silver probe, and milk passed very fluently. I forgot to observe that this cow was bred by the owner, and that nothing had ever been amiss with her teat before, and she was well when she was loosed dry.

29th.—The milk has been got out very well, and the udder is very soft; but from some cause or other, the teat is now a good deal diseased, as it is difficult to introduce the tube. Pus and serum are now within it. The tumor in the teat is as hard as ever, and the tube is obliged to be still forced through it. I fancy the teat has become inflamed from rubbing some Ung. Potas. Iodid. on it and the udder, and from another person forcing the tube up. This case I left off attending, in consequence of other interference; abscesses formed, and she lost the quarter.

Case 4.—*Obstruction in a Cow's Teats.*—13th April, 1844, I was sent for to a cow that had been purchased at our fair on the 11th inst., that had got obstructions in two of her teats; she had calved two or three days before she was bought; no milk could be got out of the hinder teat on the off side, or any out of the anterior one on the near side; the obstruction was about half way up in each teat, and I could not pass even the silver probe through the off-teat. I did so in the other, but could not, on account of the smallness of the orifice of the teats, introduce the silver tube into either of them. Both quarters took good ways, and nothing more was done but fomenting, drawing, and hand-rubbing the teats and udder, which became quite soft, and the milk flowed out well.

Case 5.—*Obstruction in a Cow's Teat.*—June 6, 1843. Mr. Green, shoemaker in this town, purchased a cow at our late fair, and at the time of purchase her udder was freely distended with milk; at night she was milked, and it was found that from only three of the quarters could the milk be entirely drawn off. From the other he could extract only about half a teacupful, when it would cease; but in a short time the lower part would be filled again, and in the same way only a similar quantity could be obtained. The owner took her again on my pronouncing her unsound.

Observations.—The obstruction in this case lay at the upper part of the teat, and there must have been a stricture there, as there was only a small orifice to admit the milk through. I could not detect any thickening or tumor about the parts. Not near all the milk was obtained from the quarter, yet it was not coägulated.

Case 6.—*Obstruction at the Ends of a Heifer's Teats.*—18th of March, 1845, I was called in to see a two-year-old heifer, belonging to Mr. Tomlin-

son, of the Chinnell. She was about a month off calving. At the very end of the teats there was substance like a smooth wart hanging from them, and one was half an inch long, the other not so long. They were closely adherent, and closed up the orifices of the teats. As they did not look like the common wart, I plucked them away. When away, I found they left a concavity at the end of each teat, and the orifice of each teat was perfectly exposed, and the ends and whole of the teats were soft and natural. The substances removed were similar in appearance to masses of gum arabic, and were formed of concentric layers on each other.

I am inclined to think that they were formed from a secretion on the inside or orifice of the teats, and as it oozed out became a hardened mass. Ordered the teats to be occasionally well soaked in warm water, to supple the parts, and to remove any fresh deposit.

SHEEP AND WOOL.

Axioms in Sheep Husbandry.—It is an axiom with good shepherds that sheep should never be permitted to get poor in the fall. Hence, as the feed becomes short and frost-bitten, especial care should be given to the flock, and here the farmer often finds himself at a loss. He wishes to spare his store of fodder as long as he can, and, indeed, while the ground is bare sheep care little for hay, unless shut entirely from grass. Between "hay and grass" sheep often lose an amount of flesh which they are not able to regain through the winter. A good plan now is to give the best food to be had; yard them on cold or stormy nights; feed them a little good hay or sheaf oats in the morning, and let them run during that day, if the weather is sufficiently moderate. Remembering that they need care and attention, and that they should be kept in as good condition as possible, use your own judgment as to the means to be employed.

Another axiom is, never let a sheep grow poor in winter. It is very hard work to recruit and bring up a half-starved sheep, even if not diseased, and often, when the warm days of spring come, they fail one by one, and careless farmers' back-lots are strewn with scattered crow-baits. The best remedy is to keep them from getting poor. If one have a large flock, the sheep should be classed off early in winter into smaller flocks, according to their age and strength, and then be fed accordingly. If they once get poor, a little grain seems to have no good effect; but a little grain given to sheep in good order will assist a good deal in keeping them so. It is a pleasant business to feed a fine flock of sheep in steady cold weather, while nothing can be more unpleasant than the care of a poor half-starved flock in the trying weather of March and April.

The true way is to never let sheep get poor at any season of the year. This is *the* axiom in sheep husbandry.—*Wool-Grower.*

Feeding Sheep with other Stock.—Sheep should not run or be fed in yards with any other stock. Cattle hook them, often mortally. Colts tease and frequently injure them. It is often said that "colts will pick up what sheep leave." Well-managed sheep rarely leave any thing, and if they chance to, it is better to rake it up and throw it into the colt's yard than to feed them altogether. If sheep are not required to eat their feed very clean,

they will soon learn to waste large quantities. But if sheep are over-fed with either hay or grain, it is not proper to compel them by starvation to come back and eat it. They will not, unless sorely pinched. Clean out the troughs, or rake up the hay, and the next time feed less.

South-Carolina Wool.—The *Charleston Mercury* says the experiment of rearing fine breeds of sheep for wool, in the upper part of South-Carolina, promises to be completely successful. Several gentlemen who have engaged in the trial have come to the conclusion that sheep flourish remarkably well throughout the State; that they can be raised at a trifling cost compared with that of the wool-growing regions of the North, and that the quality of the wool of choice European breeds does not degenerate. Specimens of the wool have been rated by English manufacturers at the top of the market. The *Mercury* thinks that wool-growing, if properly followed up, will prove a source of wealth to the upper districts of the State.

The Wool-Trade in Ohio.—The following circular was issued, Nov. 21, from the office of the Cleveland Wool-Depot:

"In placing before you our monthly report, we take great pleasure in stating that the dullness in the wool market noticed in our former circulars, has materially improved, and sales since our last foot up 311,427 pounds, at prices ranging from twenty-seven to fifty-seven cents. Accounts of sales will be sent to those whose wool is sold, with the least possible delay, and the proceeds remitted as they may direct; and we have no doubt that under the existing stringent state of the money-market, the returns will prove entirely satisfactory to our consignors.

We regret to announce to our friends that, owing to Mr. Perkins' private matters, he has deemed it advisable to withdraw his connection from this house, and in doing so permits us to express his entire approbation of the manner in which the business has been conducted, and trusts the same *liberal patronage* will continue to be extended to the Cleveland Wool-Depot.

This change will in no way affect our business, which will be conducted in the same name, and we shall continue to devote our undivided attention and efforts to the best interests of our consignors."

New Food for Sheep.—Whilst I was at Geneva, I observed every one collecting carefully the fruit of the horse-chestnut, and on inquiry I learned that the butchers and holders of grazing-stock bought it readily at a certain price per bushel. I inquired of my butcher, and he told me it was given to those sheep in particular that were fattening. The horse-chestnuts were well crushed; something in the way, so I understood, that apples are, previous to cider being made. They are crushed or cut up in a machine kept solely in Switzerland for that purpose; then about two pounds' weight is given to each sheep morning and evening. It must be portioned out to the sheep, as too much would disagree with them, being of a very heating nature. The butcher told me hat it gave an excellent, rich flavor to the meat. The Geneva mutton is noted for being as highly flavored as any in England or Wales.—*Ag. Gaz.*

Great Fleece.—We are informed that Mark Ranney, Esq., of Salisbury, in this county, sheared about the middle of May, from eighteen Spanish merino sheep, two years old, (of the Atwood breed,) one hundred and sixty-four pounds and four ounces of fine wool—averaging, as will be seen, 9 lbs. and 2 oz. a piece. In the number above stated, is included one buck, same age, that sheared 20 lbs. 8 oz. This flock has been kept with his other sheep, and has had the same feed.—*Middlebury Register.*

THE BEST SORT OF FOOD.

PHYSIOLOGY and medicine have established the fact that it is necessary, in order to keep the human body in full vigor and health, that the food of man should be varied. Bread alone is not sufficient to give the body sufficient strength and to keep it in a perfect state of health. To understand throughly the importance of the change of food, it is necessary to study the nature of each kind of food and the part it acts in the support of life. Food serves two distinct purposes: 1. To produce heat; 2. To restore the losses occasioned through the activity of the vital functions. Experience has shown that the food of a laborer should contain each day 310 grammes of calorific and 130 grammes of restoring elements. When we examine into how much of these elements are furnished by the common articles of food, we find that

100 grammes of bread furnish 8 gr. of restoring and 30 of calorific elements.

100 grammes of meat without bones, 20 gr. of restoring and 11 of calorific elements.

100 grammes of beans, 30 gr. of restoring and 40 of calorific elements.

100 grammes of rice, 7 gr. of restoring and 43 of calorific elements.

100 grammes of oat meal, 12 gr. of restoring and 41 of calorific elements.

From this we see that 4 lbs. of bread would be necessary for a man to supply the system with 130 grammes of restoring elements a day; but it would produce 555 grammes of calorific elements, consequently about 245 grammes too much. A slight change shows the advantage of varied food. For instance:

1000 grammes of bread contain 80 gr. restoring and 300 calorific elements; 300 grammes of meat contain 60 gr. restoring and 33 calorific elements—together, 140 gr. restoring and 333 calorific elements.

600 grammes of bread contain 40 gr. restoring and 180 calorific elements; 300 grammes of beans contain 90 gr. restoring and 120 calorific elements—together, 130 gr. restoring and 300 gr. calorific elements.

One or the other of the above changes furnish the body with the two elements in sufficient quantity but without excess. At the present high price of breadstuffs in France, the necessary supply of food, consisting in bread alone, would cost 93 centimes (about 18 cents;) bread and meat, 85 centimes; bread and beans, 48 centimes. Thus economy is here in conformity with the rules of hygiene. The laborer will do well not to live entirely on bread, as it is often the case with the French people, but to add either some meat or another kind of farinaceous food which will supply the necessary amount of restoring elements.—*Exchange.*

SOMETHING FOR THE CURIOUS.

I HAVE a hen of rather large size, of what particular breed I know not, of what is called a partridge-color, which has laid two extremely large eggs. They were blown, to discharge their contents, and within each of those eggs was another egg, the size of those laid by small hens, covered with a shell apparently as hard as is usual. The outside egg of both contained a yolk, and white. One of these I gave to my friend, Rev. Zadock Thompson, of Burlington; the other is before me, and measures in circumference, the longest way, $8\frac{3}{4}$ inches, the shortest way, $7\frac{1}{8}$ inches. It may be seen at any time at my study at Hyde-Park. ARIEL HUNTON.

HEAVES, OR BROKEN-WIND.

We take the following extracts from Dr. Dadd's *Modern Horse-Doctor:*

"The disease bears some resemblance to asthma in the human subject, for in each there is nearly the same difficulty in respiration, attended with dyspepsia and emaciation; there is this difference, however—in man there are remissions; while in the horse with confirmed heaves (broken-wind) there is scarcely any cessation. It is quite common in Massachusetts, to hear horsemen define every case of abdominal respiration as heaves; such are not to be considered, however, as so many cases of broken-wind. In order to make out a pure case of the latter, we must have a kind of jerking, double-flank movement, in the process of expiration. Distension of the lungs, or inspiration, must be followed by a corresponding extension of the chest and flanks. A slight cough is generally present, which has a wheezing sound, sometimes resembling a sort of grunt, and the subject is a confirmed dyspeptic, having a voracious appetite, staring coat, large belly, spare muscles, dull, miserable look, drooping head, unwilling to travel fast, and, when urged to do so, becomes soon exhausted; the excretions also indicate derangement of the digestive organs. These are the principal symptoms of broken-wind, and we have generally found these present in what is called 'heaves.'

Regarding the name of broken-wind—which, however, is a very funny name for a pathological condition of this character—it originates in disease occurring in the organs of digestion or of respiration; the former affecting the latter by the sympathy that is known to exist between them, or else from innutrition—the digestive organs failing to furnish the proper amount of nutrimental matter to supply the respiratory apparatus with its required fuel. The lungs, or rather its air-cells, are then dilated, while the respiratory passages and lining membranes are contracted or lessened in calibre, either from contraction of their tubes or thickening of their lining membranes; and this state of the parts is all that we require to explain the peculiar phenomena of *abdominal respiration.* * * The direct causes of heaves or broken-wind are over-exertion and indigestion.

Treatment.—The object is to improve the patient's health; and if we can do this successfully, an improvement in a curable case generally follows. We must restore digestion in order to cure indigestion, and in this view we give aromatic tonics. The following we have used with considerable success: Tincture of aromatic sulphuric acid; dose, one drachm in a pint of water, night and morning; most animals, however, will drink it from a bucket. In the mean time we put the animal on a course of the following alterative medicine: powdered ginger, gentian, sulphur, salt, cream of tartar, charcoal, licorice, elecampane, carraway-seeds, and balm of Gilead buds, (chopped fine,) equal parts. Dose, one ounce every night, in the food.

Changes in air, exercise, and management, calculated to fulfill the indications alluded to above are indispensable. So soon as considerable improvement is perceptible, the aromatic tincture should be omitted; and instead of giving one ounce of the alterative as a dose, give half ounce night and morning. A broken-winded horse should always be watered from a bucket, regularly three times a day; and if he be a foul feeder, arm him with a muzzle, and only remove it at meal-time. In addition to the above remedies, we occasionally allow a small quantity of garlic, say a couple of heads every other day, chopped fine, and mixed in the food."

GUANO AND PEAT ON POTATOES.

We have frequently recommended Peruvian guano as a manure for potatoes, thinking, from their comparatively high price, that its application would be found not only beneficial but profitable. Two years ago, H. C. Ives, Esq., at our recommendation, applied 600 lbs. of Peruvian guano on two acres of potatoes, and left other two acres adjoining without any thing. The guanoed two acres yielded 410 bushels, and the unguanoed two acres 238 bushels, and thus 300 lbs. of Peruvian guano per acre, costing about $9, gave an increase of 86 bushels.

This year, Mr. Charles W. Seelye, of Rochester, applied 300 lbs. of Peruvian guano on two acres of potatoes, leaving four rows in the centre of the field without any dressing. The two acres produced about 225 bushels. The four rows without guano gave 11 bushels, and four rows the same length which received guano, gave 14 bushels. This is equal to an increase of 24 bushels per acre, and estimating them worth half a dollar per bushel, (a portion of the crop was sold on the ground at 62½ cents per bushel,) will certainly yield a handsome return for the $4.50 invested in guano. We saw these potatoes early in the summer, and the difference between the four rows, and the guanoed portions on each side, was very perceptible, and indicated a much greater increase than was realized. This was probably owing to the great drought which shortly afterward set in, for it is well known that guano requires a moist season to bring out its full effect. The small increase, as compared with Mr. Ives' experiment, is also probably owing to the same cause. Peruvian guano has been used in England, as a manure for potatoes, to a considerable extent, for eight or ten years. We may fairly conclude, therefore, that English farmers find its application profitable; otherwise, the practice would soon be abandoned. But potatoes generally command a higher price here than in England, and if guano is a profitable manure for potatoes there, why is it not at least equally so here? Guano will give as great an increase of wheat here as there; in fact, if we may credit the statements of Virginia and Maryland farmers, it gives a somewhat greater increase; but its application here, as a general thing, will not be so profitable as in England, because wheat sells at a much lower price. With potatoes, carrots, cabbage, beets, onions, etc., the reverse holds true, and we believe a judicious application of *good* Peruvian guano will be found profitable. Under some circumstances, when hay is high, it will also yield a good return on meadow-land. If any of our readers have used guano, nitrate of soda, "Mapes' improved," or other super-phosphate of lime, we should be glad to hear from them.—*Rural New-Yorker.*

Peat for Potatoes.—Rev. Mr. Clift, of Stonington, Ct., relates the following experiments, made by himself the past season, to test the value of peat as a dressing for potatoes. He says:

"From the fact that potatoes have almost uniformly done well in reclaimed peat swamps, even when the rot was extensive in other places, we inferred that it would be a good dressing for potatoes. The part of the garden selected for the experiment had been trenched, and manured in the bottom of the trenches with the contents of the pig-sty. On the 24th of May, we planted three drills, about twenty feet in length, with large, sound potatoes. In drill No. 1, nothing was put. In No. 2, several bushels of peat, that had

been thrown up for the action of the winter frosts upon it, were spread over the potatoes. In No. 3, one quart of guano was carefully sprinkled.

The potatoes were dug and weighed on the 31st of August. No. 1 gave thirteen pounds; No. 2, twenty-one pounds; No. 3, nine pounds. Those in the peat were much larger and fairer than the others, and lacked a pound of equalling the weight of the other two rows. The season being exceedingly dry has been unusually favorable to the success of the peat. It has retained the moisture, so that they have suffered less from drouth than the adjoining rows. It has been quite as unfavorable for the guano, that manure requiring to be ploughed in the preceding fall, or a wet season, to bring out all its virtues. It would not be safe to infer that peat was a better fertilizer than guano, though the product in this case was more than twice that of guano. But the experiment justifies the conclusion, that peat decomposed by the frost is an excellent application for potatoes."—*American Agriculturist.*

HOW THEY DIG ANTHRACITE COAL.

THE *Rochester Democrat* has a letter from Scranton, Pennsylvania, descriptive of the manner in which the authracite coal of that region is dug and conveyed to the surface:

The coal-bed is entered by a horizontal digging through earth and sand upheld by timbers for a few rods, till the coal is reached in a bed perhaps six feet thick, lying in the midst of a floor of rock on the bottom and top. This bed lies at the bottom of a hill, sloping upward to the west some hundred feet, and containing other beds above, and separated from this and each other by strata of rock, 25 feet between some, to 70 or 80 feet between other beds. This bed extends through the hill probably, and covers some hundred acres. Here the entrance is nearly horizontal, but the coal strata often has an inclination to the horizon from 10 to 35 degrees, according to the variation in the upheaving power by which they and the whole rocks have been raised from under the ocean in times long gone by, doubtless long before the race of Adam was placed on earth.

The coal is broken out by blasting, and a great many men and boys are employed in this process, and in removing the coal into the open air and daylight. A path is cut (by blasting) into the bed, wide enough for the carts drawn by mules to enter. At the proper distances cuts are made at right angles to the main path. These are cut across by paths parallel to the main path, and the coal borne away, thus leaving solid blocks of anthracite, perhaps 20 feet square, to uphold the strong roof of the bed between which the coal is removed 50 feet wide. Thus the bed is cut up into the figures of a chess board, the blocks remaining for the support, and not being moved like chessmen. More than half a mile of these cuttings are already made in this bed. The air within is cool, and ventilation is secured by sinking shafts from the surface above down to the cavity formed. As yet, no inconvenience is felt from the combustion of the gunpowder or confinement of the air, so completely is the ventilation secured by the process adopted.

The excavation must of course be dark as the blackest midnight. The workmen use oil-lamps to give them light. The boys who drive in the coal-carts and drive out thecoal, have each a small oil-lamp fastened to his hat for his own illumination. Viewed from some distance within, the scene is

wild and magical, and one thinks of pandemonium as the blackened Vulcans come along with their lighted lamps bobbing up and down. But the jokes, and songs, and pleasantry, and happy activity, soon convince you that this is another sort of pandemonium. The workmen and boys are said to be healthful, industrious, well paid, and prosperous, and find a competent support for a multitude of contented families, whose small and comfortable dwellings are scattered at various distances from the bed. The Lackawanna rolls on at a little distance, and has the power of whitening the coal-bearing faces and bodies of the laborers, especially if employed in adequate quantity.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

LIME: ITS USES, ETC.

MESSRS. EDITORS: Your valuable journal, *The Plough, the Loom, and the Anvil*, recommends the use of lime on certain soils. I have a small parcel of land (about two acres) that, according to the description given, requires lime. But I am in doubt how to apply it to the land; and all my neighbors seem to be as ignorant as myself about it.

Now will you please to inform the public, as well as myself, of the best mode of applying quick-lime to ploughed land, and also to grass. Please to state whether the lime should be pulverized, or whether it should be mixed with other substances, and also the best time to apply it; and you will much oblige your obedient servant, A SUBSCRIBER.

Marlboro', Mass., Nov. 20, 1854.

REPLY.

LIME may be used alone, and in a pure state, or it may be applied in combination with other substances. Gypsum, or the sulphate of lime, the artificial phosphate of lime, burnt bones, etc., etc., are all valuable. On lands exhausted by successive crops, either of these preparations of lime will be found more efficacious than lime by itself. In clayey soils, quick-lime, or the carbonate of lime, is of especial value. In connection with green crops ploughed in, it is also of essential service, as it hastens the decomposition of the organized matter. In peaty lands, pure lime is of especial value, in counteracting the acids which almost invariably are present in such soils. Newly-slacked lime may be scattered over the surface of grass-land, and ploughed in, or mingled with stable manure and ploughed in on any land, or it may be used in any compost, and applied in any form in which barn-yard manures are used. But it should not be covered deeply. It is most efficacious when near the surface.

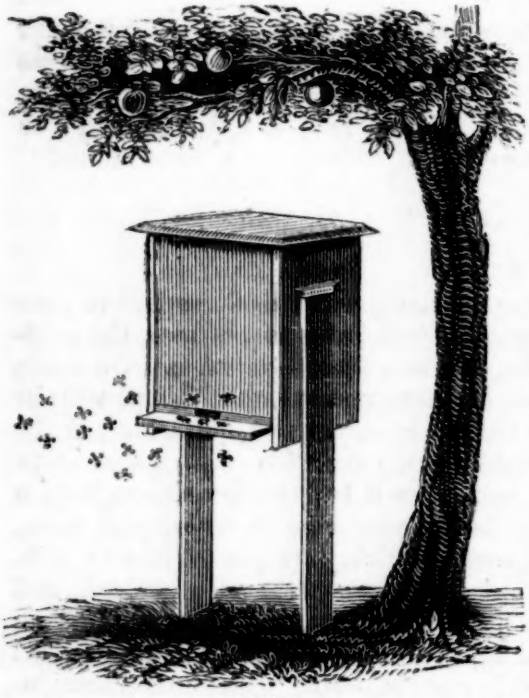
The process of slacking lime reduces it to a pulverized state, though in combination with a large quantity of water. Excess of water should not be used, as it is thereby rendered inconvenient to handle. If thrown into heaps, and allowed to *air-slack*, it will be still more thoroughly pulverized. On grass-land, the slacked lime may be scattered, either in fall or in spring. On ploughed lands, as a general thing, we should use it composted with turf, weeds, peat-soil, straw, leaves, barn-yard manure, etc., and any other organic matters; one or more of these, as they may be within reach. For such appli-

cations, the spring is the best time. But if spread and *ploughed in*, in the fall, with a liberal supply of organic matters, as straw, turf, etc., this would, perhaps, be most efficient *for the next crop*. For application on the surface, the early spring is the proper time. This of course is always the mode of applying it to grass-lands. Running a light harrow over such lands, after the application of the lime, will be found useful.

As to the quantity to be applied, it is better to use moderate quantities often, than to be very liberal with a single dressing. Eighty bushels and upwards per acre should be used, according to the wants of the soil. For crops of rapid growth, a larger quantity is desirable than for those which act more slowly. Thus barley is more profited by a liberal supply of lime than is wheat, since the latter crop uses but thirteen pounds in six months, while barley takes up seventeen pounds in about three months.

All who use lime in its pure state, unmixed, should bear in mind that it has less effect during the season of its application than in the year or two following. It is otherwise when used in a compost.

DR. EDDY'S PROTECTIVE BEE-HIVE.



THE

PROTECTIVE BEE-HIVE,

The following are set forth as the peculiar merits of this hive:

1. It furnishes complete protection against the encroachments of the bee-moth. By the use of a poisonous mixture, the deposit and hatching of its eggs is prevented. 2. It is easily ventilated in summer and winter. 3. It provides for the deposit and removal of surplus honey without a destruction of the bees. 4. The work and condition of the bees can be readily inspected. 5. It is a hive of very great durability. 6. It prevents the bees from clustering upon the outside of the hive. 7. In it bees are fed without inviting robbers from other hives. 8. It affords ample room to prevent the bees from swarming, when required. 9. It is easily cleared of dead bees and every other offending substance. 10. This hive is made for exposure to the weather, answering the purpose of hive and house, and on this account is the *cheapest* hive which can be used. 11. It dispenses with a bee-house, which affords a shelter for all kinds of insects. Its location is in the open air and *shade*, as represented above. 12. Bees are easily and safely transferred from the ordinary box-hive to this.

Its inventor is the author of a book upon bee-culture, which will be sent, post-paid, with a circular, to any person who shall forward nine letter-stamps to Henry Eddy, M.D., North-Bridgewater, Mass.

BEES: THEIR SOCIAL ORGANIZATION.—The social state of the honey-bee is peculiar. Each colony of bees is composed of a queen, workers, and drones.

THE QUEEN is the mother of the colony. She is the only fully developed female which propagates. Her fertility is very great. She often lays from twenty to sixty thousand eggs in a season. She lives from three to seven years.

THE WORKERS are very numerous, often amounting to twenty or thirty thousand in a single colony. They are *dwarfish females*, not sufficiently developed to incline them to propagate. They build comb, gather honey, nurse the young, and, in short, perform all the necessary work of the colony.

THE DRONES are males. They perform no labor. They often number from two to six hundred in a colony. The only service which they render is that of impregnating the queen. When this is done by a single drone, they are all massacred by the workers. They exist only from May to July or August. None of them are allowed to survive winter.

Dr. Eddy has kept an account of the cost and profit of his bees for two years, and finds that they have paid 654 per cent, that is, 327 per cent per annum. This is the average of his entire stock. Individual swarms have varied, he states, from one hundred to five hundred per cent. Others, using his hives, are said to have been equally successful. This gentleman has published a small treatise on the subject, which is well worthy the attention of those who keep bees. For his hives he has received several premiums; from the Massachusetts Mechanic Association, in 1853, (the only premium.) His terms are, for hive and right, $8; for individual right, $5. His residence is North-Bridgewater, Mass.

SHRUBBERY.

EXOTICS do not include all the beauty of the flower-garden. Our own hills and meadows produce plants which will bear comparison with any of foreign growth. What is more beautiful than the Lobelia Cardinalis, the Orchis Spectabilis, or Ciliaris, or Grandiflora, the Arethusa Bulbosa, the Aquilegia Canadensis, the Delphinium, the Thalictrum Uvularia, Dianthus, Althæ, Hibiscus, Epilobium, Trillium, Aster, Viola, Hepatica, Claytonia, one or more more species of each? No country furnishes a greater variety of beautiful flowers than our own.

Nor is it less rich in shrubs worthy of the garden of the most fastidious. The Kalmia Catifolia, with its beautiful bright flowers of May and June, is almost unmatched by an exotic; the Azalea Canadensis (or Rhodosa Canadensis of Wood) with its equally beautiful white and pink flowers of April

and May; the Aronia, which blooms with the coming of the earliest spring; the Cornis Florida, that puzzle to the young botanist, with its involucre of four white petals, forming a showy flower; the Vernonica, the Hamamelis, or Witch-Hazel, with its peculiar yellow flower, so prominent upon its leafless branches in the late autumn; the unrivalled Magnolia, to say nothing of many other trees and shrubs, will give interest to the richest collections of exotics. In one of the splendid gardens of Eastern royalty—if we mistake not, that of the Emperor of China—the shrub so frequently met with, and so well known here, the Sumach, (Rhus,) occupies a very conspicuous place, and not without reason. In regions where it is not very common, it would always arrest attention. Rhus Glabra is very common in New-England, and is used in the arts. Six species, in the form of shrubs, (one of which, and one only, is poisonous,) are found scattered through the United States. There is also a vine, which sometimes grows erect, Rhus toxicodendron, or Poison Ivy, which is poisonous to some persons. Add to these our beautiful evergreens, the Larch, the Spruce, the Pine, the Fir, etc., and what more do you desire? Your grounds must be unusually extensive to give suitable place to all these. And every one of these can be found in our own forests at the North. The Southern States are still richer, we suppose, in such attractions, but we are not personally familiar with them.

None of these are of difficult culture. Their only essential requisite is a natural soil. In transplanting, a large quantity of soil should be taken, beside that which adheres to the root, forming a new soil in its new position.

There are certain plants, like the Saracenia, or side-saddle flower, the culture of which we have found most successfully secured by using a large "tin pan," in which the roots are deposited, and which is buried in the earth, and will retain the large supply of water it requires much more effectually than any other process we have tried. But among all the other plants we have named, there is not one which may not be successfully cultivated in almost every garden.

Beside these, there are native vines which are well worthy attention. The Clematis Virginiana, or Virgin's Bower, is one of these. It grows with very great rapidity, and its foliage, its flower, and its seed-vessel are all pretty. We have had it cover a surface six by twenty feet, in a single season, from the growth of two or three small roots.

Those who know these and other species of ornamental plants, may gain some time by transplanting them the present season, in a very careful manner, and giving them the benefit of the earliest rays of a vernal sun.

THE PEACH ROT.

An experienced pomologist states a fact that we have never seen published, and that is, that to produce a particular variety of peach, instead of innoculating it is only necessary to plant the entire fruit in the fall. If the peach be dried, it will do equally well. It is a simpler and cheaper method, and the tree comes into bearing sooner. We can account for the above result by the well-known law of nature, by which like produces like, which is strengthened when the pulp, which is the natural manure for the germ in the kernel, containing essential ingredients of the parent stock, nourishes its reproductive vigor. This

theory was confirmed by the demonstration of several trees which had evidently never been budded, and whose fruit was identical with that of their progenitor.

The writer of this article once knew a large peach-tree which was associated with his earliest recollections, and upon inquiry found that it was more than forty years old, while several generations of similar trees, in the same soil, had passed away. In New-Jersey and Delaware, it is necessary to renew the peach orchard every five or six years. This led to examination, and a bed of tansy was discovered about the trunk. Now, as this plant is very noxious to insects, its essential oil being used by entomologists to kill their specimens, and by old-fashioned housewives as a vermifuge and bug-bane, it was naturally inferred that the preservation of this tree to such a green old age, was attributable to the presence of this plant. It was decided to try the experiment on others, and accordingly a few of the roots were placed about each of the other trees on the premises, some of which gave signs of decay. These roots spread rapidly, so that it is necessary every year to cut away a portion of them. Not only has it preserved for several years the sound trees, but renovated those that were unsound. The odor of the plant doubtless keeps off the insect enemies of this kind of tree, and it might have the same effect on others, as the plum, apple, and pear, as well as the elm, sycamore, and other ornamental trees.

It is not pleasant to discredit the correctness of statements honestly made for the benefit of others, but we must confess our want of faith in this recipe given by an exchange. The alleged effect of tansy is perhaps a natural one. We know not why vermin may not have their likes or dislikes as well as others. We should at least recommend a trial. But we have known peach-trees bear well more than twenty years, without the benefit of this odorous herb. Our readers will also remember the statements of our valuable correspondent, R. B. B., who has taken quite too long a respite for ours or our readers' comfort, in reference to like producing like in this department of horticulture.

SCIENCE IN BLACKSMITHING.

The *Scientific American* says, "Sawing heated iron or steel, is not known or thought of by blacksmiths, and when several forks or branches are to be formed from one stock, even if the branches are required to remain eventually nearly in contact, and parallel to each other, the usual method is to split the end of the iron with an awkward chisel, thereby deforming the edge of each branch, which must be rent asunder for the purpose of hammering, squaring, and shaping the edge of each; after which they are brought together as well as may be, usually retaining a roughness in form, if not a deficiency of size near the juncture of the branches. Instead of this tedious process, the iron when heated may be put into a vice, and the ends may be readily slit with a suitable saw, which would save much labor in hammering and filing. A saw for this purpose should be made thicker at the edge than at the back and with uniform teeth one twelfth of an inch apart. The saw when used, must be often dipped in the water, to prevent its becoming too much heated. There is also a method of sawing or cutting hardened steel which is not as generally known as it should be; a circular piece of common hard iron plate, or sheet iron, being adjusted to a lath, or by other means put into violent rotary motion, will readily cut off a file, a cutting tool, tempered steel spring, without in the least re-

ducing the temper. There is much symmetry in the wonderful effect of this buzz, and its cutting property is attributed to electricity. It answers a very convenient purpose, however, when the shape is to be altered without affecting their temper. It furnishes a convenient method for cutting teeth to saws; but is objectionable on account of the newly-cut surface being left so hard that it can not be readily filed by a common file. Connected with the subject of "mysterious effects," it may be stated that a bar of iron of almost any size, may be instantly sundered while hot, by the application of a piece of common roll brimstone. A knowledge of this fact will be useful when some piece of iron-work is required to be severed, but which, as, is some times the case, is so constructed and situated that no ordinary chisel or cutting tool can be brought to apply. Holes may be instantly made through bars or plates of heated iron, by the application of pointed pieces of brimstone. This phenomenon is curious although it seldom affords much practical utility."

[We begin to think that we were born under some peculiarly favored star. Many years ago we were familiar with the operations above described by our learned neighbor, and in our simplicity supposed they were known to all the world. The "instantaneous" sundering of iron by a roll of brimstone is not so distinct in our memory, though we perfectly well remember the use of brimstone for such purposes. Whether it was applied in a *scientific* manner, we can not testify.—Eds. P. L., & A.

HOMOGRAPHY.

This new invention is a wonderful step onward, if the statements below are reliable. They are from the Paris correspondence of the *New-York Times:*

"Homography is a new art, an art of yesterday, or rather of to-day, for which the inventor makes the following extraordinary claims: Whoever possesses a printed book, possesses the stereotype plates of that book; whoever has an old lithograph, a copy of an extinct edition, an impression of a steel engraving, has, by a wonderful process of transfer, the original stone, the original type, the original plate, the original block. An octavo of 500 pages can be executed, at a trifling cost, in six days. Reprints cost but half the price of the first composition; and engravings, after expensive originals, may be made for a few sous. Stereotyping will be done away with; the first edition will be printed from type, and any one copy furnishes the plates for all successive editions. Rare editions are annihilated, as one copy may be multiplied to infinity, and that, too, with all the typographical peculiarities of the epoch in which it was first printed. Books in foreign languages, in dead languages, in Hebrew, in Greek, in Sanscrit, may be reproduced by workmen completely ignorant of them. The following is the history of the process, as described by Victor Meuieri, the scientific feuilletonist of the *Presse.*

The inventor, Mr. Edward Boyer, a chemist of Nimes, undertook to solve the problem that the inventor of lithography, Senefelder, of Munich, sought in vain to solve—to reproduce upon stone any typographical work, lithograph, or engraving, of which a single copy is in existence—to do it instantaneously, cheaply, without damaging the original, and so exactly that the most practised eye can not tell the difference, and finally to multiply the

copies to infinity. In principle, M. Boyer arrived at a solution in 1844; he has spent ten years in researches tending to simplify, cheapen, and render practicable the process. He has now succeeded, and stereotypes a quarto page in ten minutes, as he actually did in presence of M. Mennier. A cast of the Temptation of St. Anthony, which lately cost a Paris publisher $280, might have been furnished him by M. Boyer for two cents and a quarter!

The process is of course a secret, and will not be disclosed even in specifications for a patent. M. Boyer does not mean to patent his invention; he will control and superintend the business in France, and will sell the secret to foreign countries."

AMERICAN GAS COMPANY.

We informed our readers, not long since, that this Company had made such progress in their arrangements that they were prepared to receive orders for their lights. Since then they have made decisive improvements in the mechanism of their apparatus. They have not materially changed its design, but have improved greatly in the manner of making them and the accuracy of their workmanship. Their orders are more numerous than they can readily supply; and yet it is but a few weeks since the *Scientific American* contained a contemptuous fling at Paine's gas-light, and that sentiment was but the echo of a dozen or more of the presses of the country. We think scientific men would be likely at least to *look* at a light, burning constantly within a few blocks of them, where the public have so often been invited to call and see it, ere they averred or even insinuated that the very thought of it was a waste of effort.

We have the gratification of presenting those interested in this matter with the following very satisfactory evidence relating to this subject. At the Hampden County Cattle Fair, held at Springfield, Mass., one of these machines was on exhibition. Among the premiums we notice the following:

"Ten Dollars and Diploma to A. M. Mace, of Springfield, for Atmospheric-Gas Machine." This was the highest premium paid for any work of art, and but one other was awarded so high.

We copy the following paragraph from the editorial notice of this exhibition in the *Springfield Republican*, and it should be understood that the writer has been heretofore among the unbelievers. It was with difficulty, we were informed, that he was persuaded to go to see the light. But he went, and now hear him:

"A prominent object of interest in the hall, during the two days' exhibition, has been the atmospheric-gas light of A. M. Mace. It is known to our citizens that Mr. Mace has been making experiments, for the last two years, in the production of illuminating-gas from benzole. He has succeeded in inventing a machine that accomplishes his purposes very perfectly—a machine large enough to supply two burners, is easily portable, and can be placed upon any table. It is wound up like a clock, and will run three hours. These are driven by springs, while the larger machines are driven by weights. The fluid used is, 1st, water, which by its gravity remains at the bottom of the vessel employed; 2d, alcohol; and 3d, benzole, each, in order, lighter than the other. By the machinery, which is very ingeniously constructed, the air is forced into the water and rendered humid; then rising through the

alcohol, the humid air takes up the hydrogen, and passing through the benzole, as it leaves the vessel for the burner, it imbibes carbon, so that the gas consumed is carburetted hydrogen, borne in a large volume of air as a vehicle. * * * The experiment was a beautiful one, and, so far as we could judge, *entirely satisfactory*. The argand-burner exhibited, gave a light we have rarely seen surpassed."

With this gas, it has been estimated, by very careful experiments, that six mills will furnish a quantity of light equal to that produced by oil at a dollar a gallon, costing nineteen mills, in a common solar lamp. According to the estimate of Mr. Mace, as given by the editor of the *Republican*, three fourths of a cent an hour produces a light equal to a common solar lamp or a four-feet gas-burner.

There is a very marked peculiarity in this gas. It is well known that colors can not be accurately distinguished by the light of oil or of common gas. But with this gas there is no such difficulty. Nor will this be received with so much hesitation, when we also add, that with this gas a prism gives the colors of the solar spectrum. This is the highest possible recommendation of any artificial light. In fact, we are not aware that any other artificial light will bear this test.

We regard this, we have stated more than once, as one of the great discoveries of the age. Others have tried various plans, and with partial success. Those who have been most successful, obtained their results by *borrowing* from this patent, and without it we do not believe that success can be achieved, in any attempt at making each household independent in the manufacture of a good gas-light. So far, we believe in the correctness of the report of the committee of the gas companies, who visited Mr. Paine at Worcester years ago, who stated that they did not believe that air passing through a cold carbonaceous substance would be catalyzed so as to produce a good light. This patent secures this result admirably, and, so far as we have discovered, no other has proved successful in this respect.

The cost of these machines, capable of supplying ten fan-lights, will be within fifty dollars, and the care required in their management is a mere trifle. Those who have bought territories, we are informed, are making a very good business of it.

IRON AND ZINC MANUFACTURE OF SLAGS.

The enormous quantities of scoria cast aside daily from the blast furnaces of the iron-works of the South-Wales coal-field are, it appears, about to be turned to good account by the ingenuity of Dr. Smith, of Philadelphia. This gentleman, with a staff of assistant chemists, has for some time been staying at Merthyr with a view of experimenting upon the blast-furnace scoria, with the object of producing therefrom a variety of articles in daily use, such as square tiles, paving flags, bottles, and utensils of domestic use. In converting the furnace cinder, Dr. Smith has been very successful. The bottles thus made are much tougher and the annealment is more perfect than in the common glass ones, from which, in their appearance, the new bottles can not be distinguished.

GWYNNE'S PUMP-WORKS, ATLANTIC DOCKS.

Few men have labored more in securing valuable improvements, in the various departments of mechanics, than Mr. Gwynne. There is no question that Mr. Gwynne's hydraulic pumps are among the most efficient means for elevating fluids. They have also great advantage over the more common pumps, in remaining a long time in perfect order. We have lately commended Mr. Carey's pumps. Between these two, those who wish for the most powerful action, at the least cost, are very hard to suit, if they will not be perfectly satisfied. We suppose that under different circumstances, one or the other of these may deserve the preference. But to give more particular information we append the following statement of facts.

At Mr. Gwynne's pump-works, Atlantic Docks, Brooklyn, we witnessed the operation of one of his small-sized drainage pumps, a six-inch discharge-pump, driven by a six-horse power engine, bringing the steam some three hundred feet, and filling a tank of over one thousand gallons in less than one minute, by our watch. As near as we could calculate, the water was raised twelve feet, affording a water-power sufficient to drive a large cotton or woollen mill.

Mr. G. believes, and exhibits experiments in proof of it, that with one of his large pumps he could have pumped the Arctic dry in twelve minutes. But we will allow him to speak for himself. He has lately sent out to parties interested in this subject, a circular containing the following statements:

"I take this method of laying before you a statement of what my apparatus can effect, and what I am prepared to do to insure its immediate adoption on all ocean steamships and steamboats carrying passengers. One of moderate size and cost, say:

2½	feet wide,	4	feet long,	weight	1	ton,	cost	$750,	will pump	50	barrels per minute.
4	"	6	"	"	3	"		$1500,	"	200	" "
5	"	7	"	"	7½	"		$3000,	"	500	" "

They can be made of a capacity to throw 2500 barrels per minute, and still be small in size, weight, and cost.

As a fire-engine, they would serve effectually to put out the most extensive fire that could occur on shipboard." He then adds as follows:

"I am prepared to build any size that may be ordered, (the three sizes above mentioned are on hand,) place it on board a barge, have a fair trial made of it, and if it fails to perform as stipulated, I will forfeit and pay to any charitable institution the price agreed for the engine; if it perform as agreed, the party ordering to receive and pay for it. I will give ample security to keep them in repair for twenty years, the owner paying me an annual sum equal to five per cent on its first cost. I will leave it optional to the proprietors of the ocean steamship first ordering two pumping-engines of 500 barrels per minute capacity, to pay for them or not after the pumps are in operation on their ship. I am induced to make this offer for two reasons—a desire to save human life, and to realize a large profit from my invention. Those who know me intimately will understand which inducement weighs most with me."

His references are among the most respectable gentlemen of New-York.

We append a description of this pump, with engravings of its different

parts. The same letters on different engravings refer to corresponding parts.

Fig. 1 is a top view. A is the stationary water-case or chamber, (bolted fast to the foundation-plate B,) in which the piston or disc rotates, motion

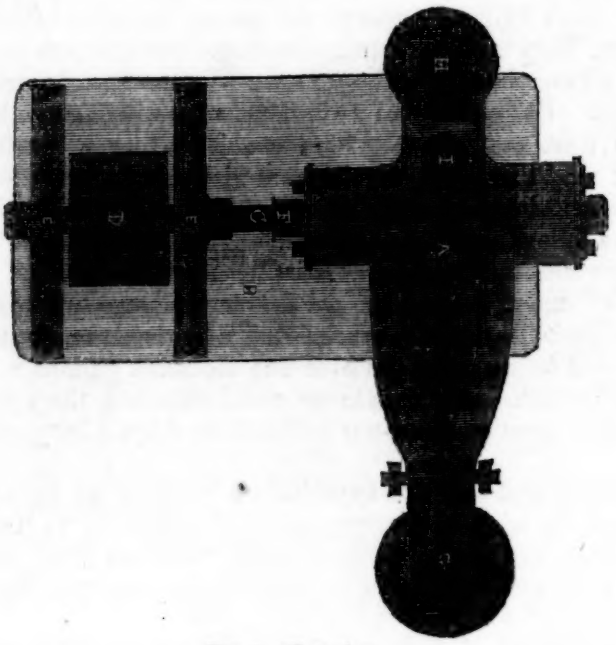


Fig. 1. Top view.

being given to it by the shaft C, on which is keyed fast the pulley or band-wheel D, and supported on its outer end by the standards or pedestals and

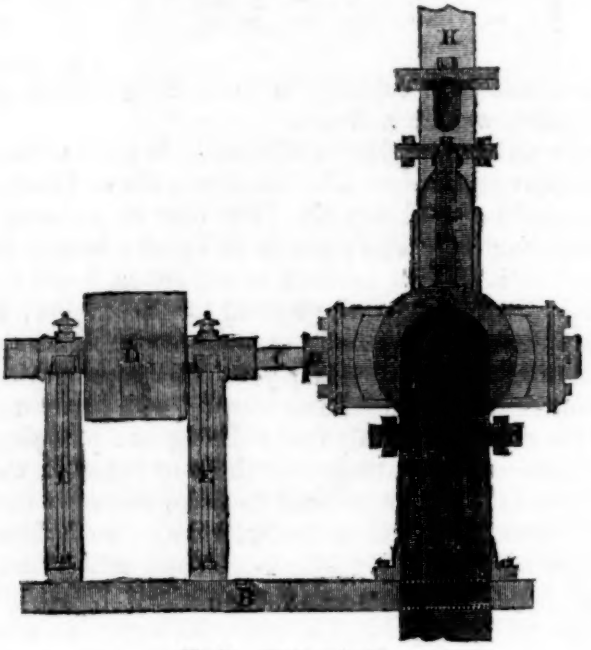


Fig. 2. Back-end view.

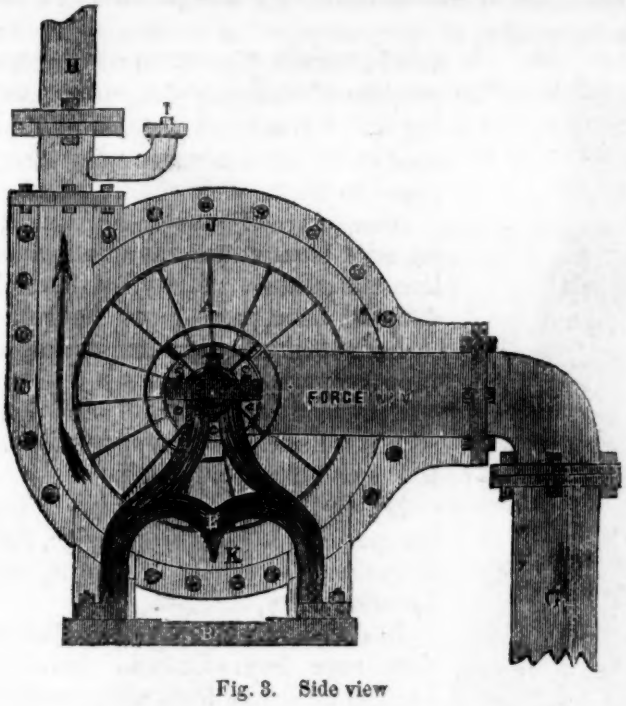


Fig. 3. Side view

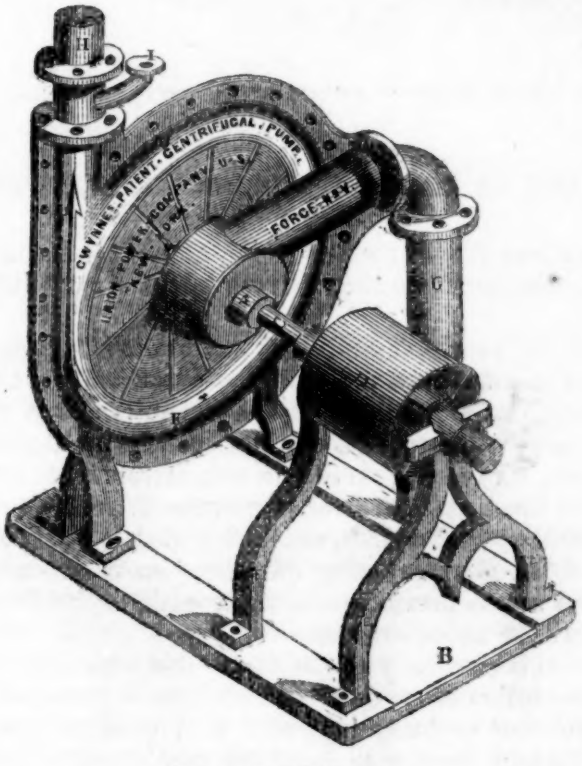
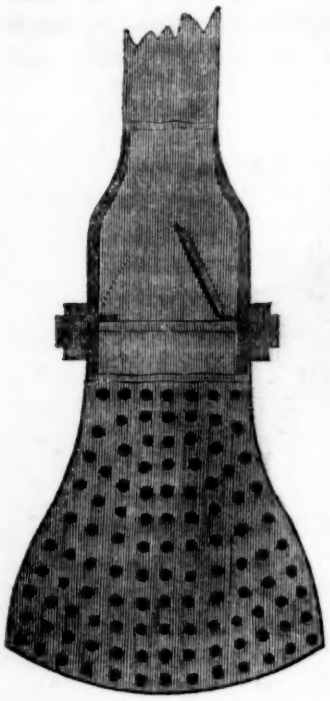


Fig. 4. Perspective view.

boxes EE. This shaft, where it enters the water-case, has a stuffing-box or gland, F. G is the suction or entrance-pipe; H the forcing or discharge-pipe; and I a branch-pipe, fitted witha screw-cap, for the purpose of charging the pump previous to starting it. J is a small plug, or vent-hole, and K a cock to let out the water when the pump is exposed to frost.



Foot of suction-pipe, with valve and strainer.

Nine sizes of pumps are made, varying, in capacity from twenty-five to four thousand gallons per minute. The diameters of cylinder, in different sizes, vary from one inch to eighteen inches; and of the suction-pipe, from two to twenty inches. The number of revolutions required to raise water fifteen feet high, from eighteen hundred to four hundred. The prices run from $30 to $2000.

Mr. G. has lately contrived a combination of his pump and a steam-engine, for purposes of irrigation, for canals, dry-docks, mines, quarries, factories, cities, etc., etc.

In different sizes, the diameters of the cylinders vary from four to twenty-four inches. Length of stroke from eight to eighteen inches; barrels of water raised per minute, from one to four hundred; prices, from $115 to $3000.

MANUFACTURE OF IRON BY THE RENTON PROCESS.

The Forest City Iron Works, manufacturing iron by the Renton process, says the *Cleveland Leader*, went into operation on the first day of July, 1854. The *Leader* remarks:

"After encountering a series of difficulties incident to all new projects, the new principle was put to a final test last Saturday afternoon, and the result was a complete vindication of the sagacity of the projectors and of the skill of Mr. Renton. We had the pleasure of being present during the trial. In a period of three hours, six blooms, varying in weight from 60 to 161 pounds were run off. Within five hours 1188 lbs. were run off, averaging per hour during the first three hours 227 pounds, and during the last two hours 303 pounds. There will be no difficulty in running off three tons of blooms per day, from each furnace, and as the present works will contain twelve furnaces, the product each day, will be about forty tons.

The new process is extremely simple to any one acquainted with the qualities of iron. The portion of ore usually called dross, is more easily melted than the iron; and this fact probably suggested the idea of the new process to Mr. Renton. By reducing the ore to about the consistency of coarse sand, and subjecting it to a heat sufficient to cause the particles of iron to cement, and the dross is melted and thus separated from the iron which is taken out in masses, called balls, and beaten into blooms. The hammer weighs nearly

10,000 pounds, and the ore-crusher possesses such vast power that fifteen tons can be crushed in sixty minutes.

Several scientific gentlemen were present during the trial, among them Mr. Foljambe, Mr. Renton, Mr. Houston, who is erecting iron works on the same principle, and a gentlemen from Boston, eminent in the literary world. All were perfectly satisfied in regard to the result.

MISCELLANEOUS.

PHOTOGRAPHY: WAX-PAPER PROCESS.—At a recent meeting of the London Photographic Society, a paper was read by Mr. Townsend, giving the results of a series of experiments instituted by him in reference to the wax-paper process. One of the great objections hitherto made to this process has been its slowness, as compared with the original Calotype process, and its various modifications; and another, that its preparation involved some complexity of manipulation. Mr. Townsend has simplified the process materially, having found that the use of the fluoride and cyanide of potassium, as directed by Le Gray, in no way adds to the efficiency of the process, either in accelerating or otherwise. The iodide and bromide of potassium with free iodine give a paper which produces rapid, sure, and clean results. He discards whey, sugar of milk, grape-sugar, etc., hitherto deemed essential, but which his experience shows to be unnecessary. He exhibited three negatives of the same view, taken consecutively at eight o'clock in the morning, with the respective exposures of thirty seconds, two and a half minutes, and ten minutes, each of which was good and perfect. The formula he adopts is:

Iodide of potassium,	600 grs.
Bromide of potassium,	from 150 to 250 "
Re-sublimed iodine,	6 "
Distilled water,	40 oz.

The waxed papers are wholly immersed in this solution, and left to soak at least two hours, and are then hung to dry in the usual way. The papers are made sensitive by wholly immersing them in aceto-nitrate of silver of the following proportions:

Nitrate of silver,	30 grs.
Acetic acid,	30 minims.
Distilled water,	1 oz.

the papers remaining in this solution not less than eight minutes. They are washed in two waters for eight minutes each, and then blotted off in the ordinary manner. Mr. Townsend states that there is no need to fear leaving the paper in the sensitive bath too long. He has left it in the bath fourteen hours without any injury. The paper thus prepared will keep ten or twelve days; it may be longer, but his experience does not extend beyond that time. With paper thus prepared, a portrait was exhibited, taken in fifty-five seconds, in a room with a side light, but it must be added that in this instance the paper was not washed, but was blotted off immediately on its leaving the sensitive bath, though not used until two hours had elapsed. Mr. Townsend uses, for developing, a saturated solution of gallic acid, with a dram of aceto-nitrate to every four ounces of it, but he considers that this proportion of

aceto-nitrate may be beneficially lessened. He finds that by this process he is certain of success, and is never troubled with that browning over of the paper which so often attends the use of the other methods of preparation. Beside the rapidity of action which he states, there is the further advantage that a lengthened exposure is not injurious. The proportion of bromide may vary from 150 grs. to 250 grs.; less than 150 is not sufficient to produce a maximum of rapidity, whilst more than 250 adds nothing to the effect.

Impression by heat, or Thermotypy.—This process proposed by M. Abate is very simple, and is based on the destructive action exerted by chlorhydric acid on organic substances. Suppose for example we have a slice of wood of which we wish a faithful impression. The wood is exposed for some minutes, to the action of cold vapors of chlorhydric or sulphuric acid, or it is wet lightly with either of these acids diluted. The slice of wood, wiped with care, is placed on a piece of paper, cotton cloth, or white wood, in a press, and a blow struck. The impression is at first invisible; but on exposing it to a strong heat, it gradually appears, and exhibits a perfect picture of the wood. This operation may be repeated indefinitely, For oak, maple, hazel, etc., the picture is of the color of the wood; but for mahogany, rose wood and many others, the color is modified, and if a perfect colored picture is desired, it should be taken on a previously prepared tint of the required kind.

It occurs to us that, by taking an impression on a plate of zinc, tin, marble, or other substance attacked by acids, a negative relief might be obtained, which would serve for reproducing pictures of the impressions. Finally, if the image of M. Abate is obtained with a substance which is a conductor of electricity, it may then be reproduced by electrotypy.

Verd Antique Marble.—The papers state that the New City Hall of New-York is to be built of Verd Antique or Serpentine marble, either from Vermont or the quarries of Milford, Connecticut. The latter is a miserable material for all out-door use, though elegant for in-door purposes. When the Milford quarries were first opened some 35 to 40 years since, the polished slabs were used as monuments in the New Haven-Cemetery; and now they are as gray and rough as if remnants of Assyrian antiquity. The Vermont material is more purely a serpentine rock, and will not wear as unevenly. But unpolished, it is a dull, blackish, gloomy stone, turning brownish gray on exposure, and fit only for a prison. It is quite time that in the selection of building material for public structures in the United States, some reference should be had to the quality and fitness of the rock. The Greeks were wise in using material which 2000 years have not wasted nor diminished in beauty.—*Ex.*

Silexian Marble.—This is a new and most valuable composition, and is said to contain some properties superior to the best qualities of marble, sustaining heat, without injury, to a greater extent than marble. It is not injured by oil or grease, is readily cleansed with water, and restored to a fine polish by rubbing with a soft cloth. It is much superior to Scagliola, as it contains no animal or vegetable substances, as glue or paste, consequently is not injured by moisture; and as the coloring is through the whole mass, it is not possible for the surface to peel off, as enamelled iron, but will sustain its original appearance for ages.

Any article that can be formed of stone is readily made of this composition, and many of them at less than one half the cost of similar articles made of marble.

Persons desirous of examining this marble, may be gratified by calling at No. 698 Broadway.

Gas-Tar in Horticulture.—A discovery which is likely to be of great advantage to agriculture, has just been reported to the Agricultural Society at Clermont, (Oise.) A gardener, whose frames and hot-house required painting, decided on making them black, as likely to attract the heat better, and from a principle of economy he made use of gas-tar instead of black paint. The work was performed during the winter, and on the approach of spring the gardener was surprised to find that all the spiders and insects which usually infested his hot-house had disappeared, and also that a vine which for the last two years had so fallen off that he had intended to replace it by another, had acquired fresh force and vigor, and gave every sign of producing a large crop of grapes. He afterward used the same substance to the posts and trellis-works which supported the trees in the open air, and met with the same result, all the caterpillars and other insects completely disappearing. It is said that similar experiments have been made in some of the vineyards of the Gironde, with similar results.—*Galignani's Messenger.*

Guano for the Sugar-Cane.—The *New-Orleans Delta* contains the particulars of some experiments with guano on the sugar-cane. The guanoed part "turned out the largest and heaviest canes in the field, and produced of first and second clarified sugars 2500 pounds per arpent." The same ground had never before produced "more than 1000 pounds per arpent." With guano, the experimentor is convinced no rotation of crop is required to produce the finest and heaviest canes in Louisiana. Another planter who had used guano, says he "never saw a heavier stand and higher canes in this State than the guano canes." From the great increase obtained from the application of ammoniacal manures to wheat and other cereal grains, we have long been satisfied that they would prove equally beneficial to the cereal sugar-cane, while from the large quantity of cane obtained per acre, and the comparatively high price of the sugar, they would afford a profit which wheat-growers could not hope for.—*Rural New-Yorker.*

Pacific Mill at Lawrence, the Largest in the World.—The largest and most comprehensive mill in the world is the Pacific, at Lawrence. It makes none but the finest kinds of goods, and the success of its operations is looked to with great interest by manufacturers. The floor surface of this immense structure is sixteen acres; the largest mill in England is eleven and a half acres. There are now in operation 40,000 cotton spindles and 10,000 worsted spindles, and these are to be increased to 80,000 and 20,000 respectively. There are 1200 looms in operation. to be increased to 2400. These, with two thousand hands, produce 300,000 pieces of cloth per annum, one half de laines. The weekly consumption of cotton is 20,000 pounds, say 1,500,000 per annum, and 500,000 pounds of wool. Once a month, the two thousand hands assemble at the cashier's office, where Mr. Clapp pays out to them $500,000 for wages, appropriating to each one the exact amount she has earned.—*Lowell Journal.*

Coal in Indiana.—For several months past, a Mr. Kerstman has been boring for coal at Evansville, Ind., being fully satisfied by geological investigations that the town must be upon an immense bed of that mineral. He has at length been successful in reaching a large vein of coal, which he says is so satisfactory in its character that he is about to commence sinking a shaft, which will penetrate the vein about the 1st of December. In two or three years, he expects to be able to dig and deliver coal, right in the heart of the town, at the rate of twenty thousand bushels a day, if desired. Pre-

vious to undertaking his experiments, he obtained from the city government the right to run a tunnel, with a railroad track under any of the streets, as the depth of two hundred and fifty feet below the city, promising by thit means to deliver coal in the city at the same price at which it can be sold at the principal shaft.

Growing Fish.—The *Cleveland* (O.) *City Fact* says that one of the most pleasing things exhibited at their late County Fair was a lot of brook-trout artificially bred by Drs. Garlick and Ackley, whose labors in this line we have heretofore noticed. They showed several broods of fish in different stages of growth, and have demonstrated that it is just as easy to grow fish as it is fowls, or any other description of food.

Plaster and Guano for Cotton.—A gentleman in Orangeburg, S. C., writes: "In 1853, I made the following experiment, with guano and plaster, on sixty acres of land: 100 pounds of guano, and 50 pounds of gypsum per acre; cost, $3; total, $180. The increased production was 100 pounds of clean cotton to the acre, or 6000 at 9 cents net per pound, or $540 with a profit of $360."

The *Knife-Grinder* has certainly been to Toledo and sharpened up the *Blade*. Read:

"The Difference.—A correspondent asks, What is the difference between a crop of corn in the field and a crop of corn in a hen?

Not much difference this year, we should guess. The crop in either amounts to only a few *pecks*."—*Cleveland Weekly Leader*.

Certainly. We shouldn't like to be obliged to *handle* that blade.

New Printing-Press.—Mr. Stephen Brown, a journeyman printer, of Syracuse, N. Y., has invented a new printing-press. The *Standard* says of it:

"By the model exhibited to us, a job in four colors can be worked at the rate of five hundred copies per hour, and in elegant style. One impression only is given for the whole form—the colors being given by different rollers, and the impression taken at once. Strange as it may seem, one letter can by this press be printed in one, two, three, or four colors, if desired; the body of the letter may be black, red, or blue, and the outside shaded with an entirely different color. As a press for printing in colors, the new invention is the most perfect ever exhibited in this country, and must effect a revolution in that branch of the printing business.

As a general press, it is quite as good, if not better than the Adams. In our opinion, it possesses several advantages over that press, even for book work, general jobbing, or newspaper work."

Another Fast Printing-Press.—The following seems to excel all inventions heretofore put in operation:

"Wilkinson's Cylindrical Rotary Press prints simultaneously from a roll of paper both sides of a newspaper, delivering the papers cut and ready for folding. The press is of the most simple construction, and very compact. It is not over eight feet in length by four in breadth and five in height. A secure frame-work supports two pairs of cylinders, each about eighteen inches in diameter. Upon one of these cylinders are the types that print one side of the paper, and upon the other those that print the reverse, the printing cylinder which gives the impression being below in the one pair, and above in the other. A roll of printing paper is suspended on an iron rod or axle on one end of the frame-work on a level with the cylinders, and but a foot or

two removed from the nearest one. And this with the inking-rolls and the cutting apparatus, constitutes all the machinery.

The process of printing is commenced by taking the end of the paper from the roll and drawing it through the press on a nearly horizontal line, passing it over one cylinder and under the other. The power is then applied, and the cylinders revolve, causing a corresponding revolution of the roll of paper which is thus passed between the cylinders, receiving its impressions on either side as it goes. As it passes out at the other end of the machine, it is cut off at regular intervals, and the separate sheets fall regularly into a pile. The cutting apparatus is of admirable simplicity and beauty, and cuts wet paper as infallibly as dry.

It will be seen from this description how remarkably simple is this machine. There is no backward or 'reciprocating motion,' as the mechanics term it, nothing but a simple forward revolution of the type and printing cylinders. The speed at which these cylinders may be made to revolve, would seem to be only limited by the rate at which the paper may be made to unwind from the roll, and this is obviously very great.

At the experimental trial observed by us, the papers were thrown off at the rate of seventy-five per minute. This number we judged could be easily doubled, and it was the opinion of the inventor, that it could be quadrupled without difficulty. If so, the machine will print eighteen thousand newspapers per hour, which is something more than double the capacity of our great press, which is not, we believe, surpassed by any newspaper press now running."

Vermont Marble.—We are authorized to say that the "American Verd Antique Marble Company" has made a contract with the United States government for a large quantity of the Roxbury (Vt.) Verd Antique Marble, to be used in the interior of the new Capitol at Washington for ornamental purposes, in the form of columns, pilasters, panels, etc., to be mingled with white marble. Vermont can furnish superior white marble also. Can't some of the smart boys on the west side of the mountain get a contract? In anticipation of a demand for their beautiful marble, the people of Roxbury have done a great deal the past year in building and other improvements, and we are glad that their expectations are in so fair a way of being realized. —*Vt. Watchman.*

Vermont Machinery for England.—We noticed the other day, at the manufactory of the Robbins & Lawrence Company in this village, a beautiful lot of about thirty machines, just completed and about to be shipped for England, to be used there in the manufacture of government arms. They are the first lot completed on a large order, (amounting, we believe, to about $100,000) recently giving by the government agent, after inspecting the work of different establishments. This machinery is procured, we understand, for the purpose of introducing the American process, by which the parts to the different guns are made uniform and interchangeable.—*Windsor Journal.*

The Mosquito.—We cut the following from an exchange in which it is appended to a description of some experiments in raising mosquitoes:

"The development of the mosquito is a curious process. In the first place the egg becomes what is called the 'water-tiger' that devours the smaller animalculæ with insatiable appetite.

In a spectrum of a drop of water, projected from a hydro-oxygen microscope we have seen the shadow of one of these water fiends swallow the

shadows of a dozen smaller imps—the larvæ of midges and such 'smaller deer'—in less than three minutes.

In due time a change comes over the monster. Nature envelops it in a pellicle, or semi-transparent shroud, from which all the antennæ of the mosquito stick out at one end and its tail at the other.

Finally the creature rises to the surface, the caul bursts, and out flies the insect like an internal illustration of the fable of Psyche. In five days the machinery of its existence, which is wound up to go for that time and no longer, runs down. Such is the biography of the mosquito."

Fat Turkeys.—If you would have good fat turkeys for Christmas, feed them liberally with charcoal-dust. If you don't believe it, try it, and if it fails send us the turkeys.

Illustrated Magazine of Art, and Dickens' Household Words, have been disposed of by Mr. McElrath to Mr. J. A. Dix, of this city, who will publish the latter regularly on every Thursday. The *Illustrated Magazine* is still monthly.

When we had an opportunity of seeing these publications, we used to find them worthy of attention, and noticed them as such. Recently, and for months, we have not seen a copy of either, and hence know nothing about them.

AMERICAN PATENTS.

Engraving and Painting on Glass.—A very important invention has been recently achieved by Mr. Whipple, of Boston, who proposes to transfer, print, or engrave on glass, by purely mechanical means, any device, scroll, landscape, or even shaded portrait, with all the fidelity of a wood engraving, and this with a rapidity and cheapness heretofore undreamt of. The present mode of engraving figures upon glass, by grinding upon a wheel, requires much time and skillful workmen, and while absolutely precluding the production of other than heavy and straight, or slightly curved lines, renders nearly impracticable any very close imitation of the pattern or copy. The new process, on the contrary, guarantees that each piece operated upon shall be an exact copy of the preceding one, insures an unprecedented degree of perfection in every detail, renders practicable the execution of fine lines, shades, and points, and, while requiring no unusual perfection of form, actually dispenses with the extravagant thickness of glass hitherto required in articles to be engraved upon, as well as figures, with nearly equal facility on perfectly plain or uneven sheets of plate-glass, cylindrical or conical drinking vessels, globular or irregular-shaped lamp-shades, and, in fact, in any of the usual forms in which vitreous material is applied to useful or ornamental purposes.

The most remarkable point, in connection with the machine, is its extreme simplicity; it is of small size, and may be carried in one hand, with all its appurtenances, including a pulley for driving it by steam or water-power. Three full-sized machines have already been constructed, and others are in progress, it being designed to enter immediately on the manufacture and sale, on a large scale, of glass thus ornamented. It is estimated that one girl can attend to four machines, and that each of the four will engrave a goblet, or

other small article, in from three to ten minutes, thus affording a rapidity of execution and diminution of expense which, among other things, may render the use of glass, engraved with the name, seal, motto, or favorite device of the owner, as common as that of plain glass now is. The metallic pattern, used in this process, is prepared by competent artists, at a moderate expense, and apparently retains all its original clearness and sharpness after the production of an immense number of ornamented articles. In brief, this method, which has just been patented in almost all civilized countries, must be acknowledged to execute what it has before been considered impossible to perform, with a degree of accuracy approaching absolute perfection—to execute work with a rapidity corresponding to the demands of this "fast" age, and, considering the diminished thickness of the material, and the female hands employed, to work with a cheapness sufficient to warrant a hope of its becoming an art of considerable importance.

Improved Printing-Press. *By Ervin B. Tripp*, 272 Greenwich street, N. Y.—This improvement consists in the combination of the principles of the platen with the cylinder movements. It is generally conceded that an impression from types is best received by the reciprocating motion obtained by pressure between two flat surfaces, but heretofore the objections to the platen press has been made because of its slow motion. The object of this improvement is to quicken the operation, by a direct application of power, and then to facilitate the labor of feeding the sheets, inking the form, etc., that no time may be lost. The sheets are fed into the press by means of a cylinder and detached reciprocating nipper-bar, thus obviating the necessity of *lifting* the sheet to be printed from one feed-table to another. A fly-frisket attached to the sliding tympan throws off the printed sheet. The press is so constructed as to obviate the necessity of complicated machinery, which lessens very materially the cost of construction. Patented October 3, 1854.

This press is being built to all sizes, and particulars can be ascertained on application to the patentee.

Cutting Wood-Screws.—A very useful machine has been invented for making wood-screws, by Messrs. George F. Wilson, of Providence, and James M. Wiley, of Olneysville, R. I., which, although not yet in constant operation, bids fair to surpass others now in use in this manufacture. The machines employed at Providence, to which place this branch of business has heretofore been almost exclusively confined, cut about seven or eight screws per minute; while that of Messrs. Wilson and Wiley, which is considerably larger and heavier, is found capable of producing thirty-two screws in the same time. The machine, in fact, may be considered in one sense as a quadruple machine, there being four places for the reception of the blanks, four places from which screws are dropped when finished, and four screws in process of being cut at or about the same moment. The machine is very much simplified, and the durability of the cutting tools is much enhanced by this invention, the thread of each screw being formed by a series of eight cutters instead of one.

The manufacture of a wood-screw requires three distinct operations. The wire must be cut into lengths, and a blank, with a smooth conical head, and a plain cylindrical shank, must be formed out of each length. The head must afterward be sawn across, to allow of the action of a screw-driver, and the shank must be transformed, for perhaps half its length, into a smooth and sharply-threaded screw. This operation is performed entirely by remov-

ing the metal between the threads, and is the only process worthy of much attention. The usual plan is to fix the blank by the head in a species of lathe, and cause it to revolve rapidly, while a tool, pointed to a sufficient angle to form the desired thread, is pressed upon it from one side, and moved longitudinally with such speed as will afford the proper pitch. As a thread can not, however, be cut to a sufficient depth at one operation, the same tool is repeatedly traversed backward and forward, requiring much complex mechanism, and subjecting the single tool to a very considerable amount of abrasion. In the new machine this reciprocating movement is entirely dispensed with, four series of tools, which are substituted for the single one, being carried on a slowly-revolving wheel. The blank is fed up by machinery, caught by tongs, and made to rotate. A rest is next pressed up on one side to steady the blank, while the other side is traversed by eight cutters, following each other in regular succession, each deepening the groove made by its predecessor, until the last leaves the thread complete, whereupon the screw is dropped. This series of cutters moves steadily onward, to engage with the next blank; while another blank is brought forward from the feeder, the side-rest again comes into action, and the next series of cutters follow each other along the surface of the metal. The cutters are not rigidly fixed to the slow horizontal wheel, but are so connected to it as to be pressed forward by a cam into the proper degree of contact with each blank, the screws being of uniform diameter, or tapering to any extent desired, according to the form of the cams employed. The patent was issued from the U. S. Office in April last, the invention having been also patented in Great Britain, France, and other countries. The rotatory wood-screw machine, complete, stands about four feet high, and covers an area of about four feet square.

Calcium Light.—Mr. Robert Grant, of New-York, has been for several years endeavoring to perfect the Calcium Light as an illuminator for light-houses; and some recent experiments on the Latting Tower would seem to indicate some prospect, at least, of *brilliant* success. The Latting Tower is a public observatory, erected in the upper part of the city, the top being just 300 feet above the earth. A full-sided apparatus was placed on the summit a few weeks since, and the shadow projected by its most intense flashes, at the distance of eleven miles, was judged to be equal to that from the moon in its first quarter. The light is thrown from the focus of a large parobolic reflector in one pencil of rays, which is made to travel round the horizon once in seven seconds. This light is made to repeat any required number of occultations in the following manner: To give the number twenty-one, the reflector is turned twice with the light burning; then the light is put out, excepting a small point of hydrogen, and the reflector turned three times; the light is then increased again by the same machinery, and turned once; lastly, the light is suppressed during five revolutions. Any other number can be made by simply changing a cam-wheel. The cost of producing a light of this intensity is represented by Mr. Grant as being half the sum required for a first-class Fresnel light. The lime-point employed in this modification of the oxhydrogen light, is said to burn or rather to glow with intense brilliancy for twenty-four hours without disintegrating.

Gas-Heating Apparatus. By Charles M. Guild, Brooklyn, N.Y.—The nature of this invention consists in so constructing the heating apparatus, as that the weight of the thing to be heated, or the act of placing the article to be heated thereon, shall open the valve to admit the gas to the burner, and the removing of the article therefrom close the valve. And also in the

small perforation leading from the gas-pipe to the burner, for the purpose of admitting a jet of gas to the burner, barely sufficient to keep up the flame without unnecessary wasting of the gas, when the apparatus is not in actual heating use, or when one article is removed, and before another is replaced thereon, and by which means the re-lighting of the apparatus is avoided.

Improved Sawing-Machine. By Chas. F. Packard, Greenwich, Ct.—This invention relates to a new and improved sawing-machine, for sawing laths, pickets, etc., direct from the log, and consists in the employment or use of a vertical saw, or a vertical reciprocating saw, and a series of horizontal circular saws, being placed on one shaft at a suitable distance apart; said shaft being attached to a vibrating frame operated in a peculiar manner, the horizontal saws will be thrown outward from the carriage and log, when the carriage and log are moved in one direction, and thrown in toward the carriage and log, when the same are moved in the opposite direction.

When the horizontal saws are thrown in toward the log, they cut into the log the distance the width of the laths, pickets, or other article to be sawed from the log are intended to be, and when the horizontal saws are thrown from the log upon the return-motion of the carriage, the circular saw cuts the laths, etc., from the log.

Improvement in Self-acting Mules for Spinning. By Geo. Wright, New-England Village, Mass.—The nature of this invention consists in transmitting the power which actuates the mule in its in-and-out motions through cone-pulleys, in combination with some means of automatically shifting the band upon the cones, by which means a great saving of machinery is effected, and I am enabled to give to the carriage a varying velocity, suited to the requirements of the different parts of its traverse.

My invention, furthermore, consists in backing off the yarn at the moment the spindles are stript, by means of a friction-clutch and stationary band, which are brought into action by the rising of the stripping, and operated by the last motion of the carriage as it takes out. And it also consists in winding on the yarn as the carriage takes in by means of the aforesaid clutch and cord, which clutch is regulated in its bite by the tension of the yarns, so that when the strain upon the latter becomes too great, the under-fallen wind is depressed, thereby opening the clutch and permitting the cord which drives the spindle to slip, and thus regulating the degree of tightness with which the yarn is wound.

Improvement in Machines for Pegging Boots and Shoes. By A. G. Gallahue, New-York.—This invention relates to certain new and useful improvements in machines for pegging boots and shoes, and consists in the employment of a rocking bed-plate, on which the boot or shoe is placed or attached, said bed-plate being attached to a carriage by pivots and governed by a spring, by which the edge of the sole of the boot is made to bear against the gauge-block, and cause the pegs to be driven into the sole at an equal distance from its edge.

ENGLISH PATENTS.

SELF AIR-HEATING BLAST-FURNACE. By WRIGHT & BROWN, Newcastle-on-Tyne.—This important modification of the hot-blast smelting furnace promises to effect a very great economical change in the iron manufacture. It is applicable as well in the primary process of reducing the metal from the crude ore, as in the re-melting and converting operations of the manufacturing founder. Instead of blowing the air right into the melting contents of the furnace or cupola, either in a cold state, or heated by passing through a separate heating apparatus, the furnace, or melting-chamber, is formed so that it may act as the heater for its own blast. For this end, the lower portion of the furnace is formed with receiving-chambers, so contrived that they may hold a mass of melted metal, as descended from the body of the furnace above, and thus act as the heating surface for the cold air supply. Thus, the external cold air is first blown into these chambers, and, being there heated, it passes off into actual contact with the melting mass of material under treatment.

As applied in the construction of smelting or blast furnaces, the cold air is first blown into the lower part of the body of the furnace, and it is then passed into heating chambers, formed in the bottom and sides of the furnace body. It is subsequently conveyed into the furnace at a level slightly above that of the blast-hole, and it is there made to pass through the coke and metal with which the furnace is charged.

STEAM-ENGINES AND BOILERS FOR SCREW PROPULSION. J. E. M'CONNELL, Patentee, Wolverton.—This is one of the latest of Mr. M'Connell's many improvements in steam machinery; and although we here represent the arrangements as especially contrived for a screw steamship, yet the general features of the plan are applicable for all marine purposes, the objects aimed at being superior compactness of construction and economy of cost, while the working efficiency is wholly improved.

The new plan of boiler resembles that previously patented by Mr. M'Connell, and now in use for locomotive purposes, the fire-box being considerably extended into the boiler's barrel. When arranged for marine purposes, a set of cross partitions are introduced into the water-space above the fire-box, for the purpose of preventing the rolling of the ship from sending all the boiler-water into any particular part of the boiler. By this modification, the water in the boiler is constantly kept well diffused or spread over the available heating surface; and for the prevention of deposit and incrustation, vessels which can be detached at pleasure, of suitable form, are placed under the barrels of the boilers to receive the deposited or precipitated matter from the water, or this deposit can be withdrawn by a blow-off cock, or by other suitable means; separate or additional fire-doors are also introduced into the boilers beneath the fire-boxes, through the water-spaces, for the admission of atmospheric air to render the combustion more complete. In arranging the engines themselves, the steam-cylinders are disposed diagonally athwart the ship, and at or about a right angle to each other; that is to say, with their axes transversely as regards the keel-line, so as to suit well for actuating the screw propeller shaft laid in this line. They are connected to the stern ends of the boilers, which are also laid in the direction of the keel-line, and the connecting-rods of the pistons proceed direct to the crank on the screw-shaft.

An improved expansive motion is also adopted for working the valves, cutting the steam off at any required part of the stroke, either by having one slide-valve placed in the centre of the cylinder, as commonly used in locomotive-engines, or by having a slide-valve at each end of the cylinder, thereby greatly facilitating the working of the engine, as well as considerably reducing the consumption of fuel. The steam-pipe or pipes from the boiler are taken through the flame-chamber or smoke-box, for the purpose of drying or surcharging the steam with an additional quantity of heat, previous to its admission into the cylinder, consequently preventing, to a great extent, the condensation which takes place from the exposure of the steam-pipes. The feed-water may be conducted through pipes or vessels placed in the flame-chamber or smoke-box, where it is heated, either by being forced in jets upon the exhaust-pipe, or by admitting the steam in jets on the surface of the water. The steam-pipes bringing the steam from the boiler, are so arranged as to allow of any one or more of the boilers being worked separately at pleasure. The engine-framing is also so contrived, that the cylinders and machinery are held securely in their proper positions, all chance of derangement from the motion of the vessel in stormy weather being avoided, and the cylinders and boilers are cased over to prevent the occurrence of objectionable condensation from undue exposure to the atmospheric action. The screw propeller shaft is made hollow or tubular, so as to combine great strength with lightness; such shafts are made according to the process used in the manufacture of the patentee's hollow axles and shafting. By the adoption of the present improvements, coke or anthracite coal may be employed in the furnaces, and steamships will be enabled to carry enough fuel to supply them for a longer period than at present. The steam is also to be surcharged with heat for the purpose of satisfactorily drying it prior to its entering the cylinders, so that "priming" may be prevented; the feed-water for the boilers is also heated and purified, so as to enable it to absorb all the available heat given out from the fuel before the waste reaches the funnel.

Direct-Action Oscillating Engines. By Neilson & Co., Glasgow.—The following is a description of an arrangement of direct-acting engines for screw-propulsion, lately introduced by Messrs. Neilson & Co., and possessing great compactness as well as other practical advantages. There is a side and an end elevation of the engines, which are of the inverted oscillating cylinder class, the two cylinders of which the engines consist being disposed fore and aft in the keel-line of the vessel. These cylinders are arranged to work upon horizontal central trunnions, carried by vertical standards springing from a solid rectangular base frame; the two inner or contiguous trunnions, that is, one of each cylinder, being carried by pedestal bearings set on the opposite sides of a central or intermediate standard, while each outer trunnion has a separate standard of its own. The actuating steam is brought to the two cylinders by pipes opening into the external trunnions, which are hollow for the purpose. After entering the trunnion, the steam passes right and left through a steam-jacket surrounding the cylinder, and thus reaches two separate external slide-valve chests, with which each cylinder is fitted, set on the cylinder a little on each side of the axial line of the trunnions, and at an angle therewith, being about one third of the cylinder's circumference apart. Each slide-valve admits steam to, and exhausts it from, one end of the cylinder, which, by this arrangement, is well balanced as to dead weight in its working action. The exhausted steam passes from these two valve-chests (in each case) to the inner trunnion, and thence into the upper portion of the central

standard, the lower portion of which acts as the condenser. Each cylinder has two eccentrics for the back and forward motion. These eccentrics are fast upon the screw or crank-shaft in the usual way, and their rods work upward, carrying the usual curved expansion link. The slot of the curved link has fitted into it the stud-pin, on the lower end of an open vertical frame-piece, working in guide-eyes fast to the side of the central condenser standard. The upper cross-bar of this frame is formed with a curved slot, to receive the stud-pins of a pair of reversed rocking-levers, one for each slide-valve. In this way, the eccentric action is accurately conveyed to both valves to give a simultaneous traverse.

The pendant piston-rods, of course, pass directly to the two cranks on the propeller-shaft, which runs astern, through central openings in the standards. The same base-frame carries the two vertical air-pumps, the rods of which work up through the upper pump-covers, each rod having a cross-head running fore and aft, and having at each end an eye for connection to the vertical plunger of a cold-water or bilge-pump, which duplex pump-movement in each case answers as the air-pump guide. The air-pumps are placed, one on each side of the central standard, from the lower hollow portion of which they take up the water of condensation, and discharge it out through elevated hot wells, one on each side. The two air-pumps are worked from one central crank on the screw-shaft, two connecting rods being passed up diagonally, one to each of a pair of levers, set with their inner ends on studs carried by the central standard, while their outer ends are linked to the air-pump rods. Suitable openings are formed in the central standard, to allow of the working vibration of these levers.

The great simplicity of this arrangement of engines, combined with the direct connection of the main working parts, admits of their being run at a great velocity, without injurious vibration or liability to derangement.

Printing Surfaces. J. B. Graham, Glasgow. *Patent dated February* 6, 1854.—This important invention opens up an entirely new path in the production of ornamental designs for block or surface roller printing, for textile and other goods, as well as for various other purposes.

According to this system, the printing surface is derived from a matrix consisting of a compound or built-up surface or mass of pins or type. The pins or type, composing this built-up matrix, are of any suitable section, capable of being firmly and regularly bound up together into one mass. A collection of such pins, each being of exactly the same length, is bound up into a uniform mass, the ends of the whole series being coïncident, or in one plane. The operator, then having his pattern or figure previously drawn, depresses such of the pins as are intended to print, or are intended to correspond to the impression surface. He thus produces the intended figure in *intaglio;* the pins left standing at their primary level, corresponding to the ground or surface not intended to print. A cast is then taken from this matrix, in gutta-percha, type-metal, or other material, to form the printing surface. As all the pins are of the same length, it is obvious that the pins pushed down or depressed at one end or face, appear prominent at the reverse face; hence the operator has the power of making reverse or counterpart printing surfaces simultaneously, the two being in exact correspondence with each other. If desired, the actual pin surfaces themselves might be used as the printing medium. Printing surfaces, so produced, may be employed either as blocks or as surface rollers; and they may be used as *intaglio* printing surfaces, by arranging them to print from the sunk parts, just as in cylinder printing.

GRAIN MILLS. J. H. JOHNSON, Lincoln's-Inn-Fields, and Glasgow. *Patent dated October* 22, 1853.—Several improvements in mill machinery are comprehended in this invention, which has been patented in this country on behalf of MM. Froment & Son, of Chartres, France. The chief improvement relates to the mode of driving the millstones. A number of pairs of stones are arranged in a ring, and are all driven by one large horizontal pulley, acting frictionally, and set in the central space between the millstones. This large pulley actuates small pulleys upon intermediate shafts, carrying pinions in gear with spur-wheels on the spindles of the several millstones.

FOUNDATIONS OF HOUSES. G. BIRD, Glasgow. *Patent dated February* 11, 1854.—Mr. Bird here provides a means of obtaining secure, dry, and impermeable substructures or foundations in buildings of various kinds, by the use or application of asphalte, or asphaltic compositions. When the foundation trenches are prepared, the bottom is laid with a mixture of asphalte, or asphaltic composition, and broken stone, slag, shingle, or other similar materials. A satisfactory mode of laying such a substructure, is that of first making the substratum perfectly solid, which may be done by ramming the ground firm, or by the modes commonly adopted where the ground is very soft, and then depositing a layer of the stone or slag, of from four to six inches thick, in the bottom, and afterward pouring the melted asphalte through this layer. This compound layer becomes perfectly solid when cool, binding together in one mass the whole of the foundation, and furnishing a strong support to the superstructure. The two materials may be thus alternated, until a sufficient thickness of substructure is obtained. This foundation effectually precludes the upward striking of damp, or the burrowing of animals, whilst it adds to the firmness and stability of the superstructure. By another mode, such substructures may be formed in blocks or solid masses for conveyance to the site of the building, the blocks or masses, when laid in position, being cemented or joined together by asphaltic composition, or being otherwise combined. Instead of using asphaltic compositions, or mixtures wherein real asphalte is an ingredient, any pitchy or resinous matters may be employed on the asphaltic principle.

In practice, the asphaltic foundations may be laid either with or without other substratum. When laid entirely of asphalte, the thickness of such asphaltic material is intended to be from one to two feet, according to the nature of the soil and the weight of the superstructure to be erected thereon. If stone foundation-blocks are used, in combination with the asphaltic base, a single layer of the asphaltic material will usually be sufficient, the foundation-blocks being then laid upon the asphaltic layer; or, if concrete is used, a layer of asphalte may be deposited upon the concrete.

RAILWAY AND ALARM SIGNALS. Captain J. Norton, Cork. *Patent dated January* 19, 1854.—Captain Norton, with whose numerous inventions, connected with artillery and warlike projectiles, we have already made our readers acquainted, has turned his attention, with equal success, to several contrivances for danger-signals, and for effecting communications between different parts of railway trains. According to Captain Norton's system, the guard, or other official, who is to make the signals, is supplied with a cross-bow, or other similar impulsive apparatus, as well as with a number of explosive missiles or projectiles of a peculiar kind. These projectiles, or shot, are composed of tubes of stiff paper, thin sheet iron, or other suitable

material—the paper, or case material in each being sufficiently rigid to withstand the effect of the shock of the cross-bow in firing. This tubular case is filled with Hall's gunpowder, or other explosive agent; such, for example, as is used in Captain Norton's fog-signals — that is, chlorate of potash, and sulphuret of antimony. This forms what may be termed a charged arrow, and its heel, or the part next the bow-string, has one or two heads of Bell's lucifers, or other frictional explosive matter attached. With this arrangement, when the shot or arrow is discharged, the friction generated during its passage along the bow-shaft, or stock, ignites a fuse composition,¶ or frictionally-explosive contrivance, communicating with the exploding charge. In this way the guard can shoot his signal in the direction of the engine-driver—the explosion being made to occur at any determined distance in front of the driver—so as to command his attention in the most peremptory manner, by a mimic display of lightning and thunder; or the composition in the case may be such as burns comparatively slowly, so as to continue during the entire flight of the arrow. A few grains of coarse emery powder are attached by means of glue or gum to the front part of the cross-bow stock, to cause the certain ignition of the fuse composition.

These signal missiles may be discharged in various ways. Thus, the exploding arrow may be discharged from a cross-bow, or from the "arbalist," with caoutchouc springs lately introduced by Mr. Hodges. The short whistling missiles may be discharged from rifles or muskets, or from small mortars made for the purpose. When it is required to discharge a number of such signal missiles in rapid succession, Captain Norton employs the following simple plan. He fits a number of the missiles with suitable percussion cartridges, the percussion contrivance being at the heel or back of the cartridge. Then taking a musket or rifle, in the barrel of which the missile will fit very loosely, and placing it at a convenient inclination, he drops the missiles down the barrel. On reaching the breech, the percussion will ignite the cartridge, and discharge the missile. A plain gun-barrel, without either touchhole or lock, will answer perfectly for thus discharging signal missiles; and the plan admits of great rapidity in loading and discharging, these two operations being produced by one and the same action.

General Agency.—The publisher of *The Plough, the Loom, and the Anvil*, believing it in his power to be of essential service to the readers of that journal, in the purchase or sale of various articles, and the transaction of various kinds of business, would announce to them that he is ready to execute any such commission which he may receive, including the purchase of books of any description; implements connected with agricultural, manufacturing, or mechanical operations; artificial manures; farm and garden seeds, etc., etc. One of the gentlemen connected with the journal is a proficient in music, and experienced in the selection of piano-fortes, flutes, etc., and will execute orders in that department.

He will also act as agent in the purchase and sale of Real Estate.

☞Particular attention to business connected with the Patent-Office.

Letters of inquiry on these matters will be promptly attended to.

School-Teachers. — Having had occasion to furnish teachers for some of our Southern friends, we have been fortunate enough to learn of several young ladies who are admirably well qualified for families or schools, and if any are in need of such, a letter addressed to us will receive immediate answer. We shall not fear to guarantee that any reasonable expectations will be fully met. Some of them are desirous of going South.

NEW BOOKS.

WEBSTER AND HIS MASTER-PIECES. By Rev. B. F. TEFFT, D.D., LL.D., author of "Hungary and Kossuth." In 2 vols. Auburn and Buffalo: Miller, Orton & Mulligan. 1854. 498 and 536 pages, large 16mo.

MR. WEBSTER was the man of the age. He was not merely a great lawyer, not merely a great statesman, not merely the personification of eloquence—he was all these, and much more beside. We have seen him too often, and known him too well, to be afraid of exaggerating his intellectual greatness. He who writes of such a man, is, to some extent, under a certain indefinable power, a charm, so that his pen is almost moved by an external power. At least this is our experience. So far as a cool criticism of a particular effort is concerned, it is well that it be done by a stranger. Of the volumes before us, the first consists of biography. The early life of Mr. Webster is dwelt upon—perhaps wisely; and would that the youth of our country would learn wisdom from the example. In mature years, he is regarded in his various capacities as lawyer, representative in Congress, Secretary of State, Senator, and the closing period of his life. We have but partially perused this volume, but the work appears to be well done. The selection of speeches, his "master-pieces," is excellent—none better could be made. The first volume contains an excellent full-length likeness. We commend these volumes to every patriot, and every one who would honor the greatest man of the age.

THE LAMPLIGHTER. Illustrated Edition. By THWAITES. Engraved by Baker & Andrew. 73D THOUSAND. John P. Jewett & Co., Boston.

WE have already noticed this capital story. But the enterprising publishers, who well know where to bend their energies, have here given to the public a well-illustrated edition. This will increase its sale, already so remarkable. That a young lady, scarcely out of her teens, and with little practice as a writer, should sit down and pour out, as from a fountain, such a tale, with so many scenes not only of great beauty, but scenes also of great power, is passing strange; and the motive for doing it, which is too holy for the public gaze, is so lovely we know not what to say of it. Truly our daughters are yet worthy of their sires. *She hath her reward.* The literary faults that may be picked from these pages, if multiplied by scores, would scarcely weigh any thing against all these remarkable attractions. For sale by Sheldon, Lamport & Blakeman, New-York.

LEAVES FROM THE TREE IGDRASYL. By MARTHA RUSSELL. Boston: John P. Jewett & Co. 1854. pp. 348.

LIFE is figured by the old Norsemen as a tree—the tree Igdrasyl. These leaves are thence representations of so many lives. The author of this volume has here presented them to us in various forms. Distinct and independent stories make up the volume. All are readable, several are capital, and some pages are of peculiar power. We think, however, that the author shows an ability to do more than she has done. We read a few pages, by way of introduction to some tale, get deeply interested, and the curtain drops—the story closes. We have read, however, only the first half of the volume, and perhaps the remainder of the volume is not open to such a criticism. It is, however, an especially venial fault to charge upon an author, that she does not write enough. The large majority write too much. For sale by Sheldon, Lamport & Blakeman, New-York.

SYNONYMS OF THE NEW TESTAMENT; being the substance of a Course of Lectures addressed to the Theological Students of King's College, London. By RICHARD CHENEVIX TRENCH, Professor of Divinity, King's College, etc. Redfield, New-York. 1854. 12mo. 243 pages.

THIS learned treatise is well defined by its title. It is limited, of course, in the number of words which it defines, but about a hundred and fifty are treated under sixty different classes, and their exact shades of meaning are given with very learned accuracy, and the distinctions claimed for each are enforced by citations from some author of acknowledged authority. It is a book of great value, not only to the critical scholar, but to the careful reader.

THE CAPTAINS OF THE ROMAN REPUBLIC; as compared with the great Modern Strategists, their Campaigns, Character, and Conduct, from the Punic Wars to the death of Cæsar. By WM. HENRY HERBERT. New-York, Chas. Scribner. 1854. 511 pages, royal 16mo.

THIS very entertaining and instructive volume is one of a *system* rather than a series, to use the author's favorite expression. Each volume is independent of all others, and yet each is of a similar character with the rest, and, like all histories, they all are more or less related to each other. Mr. Herbert has been judicious in selecting those "who were really eminent, really entitled to be enrolled in the annals of all time." Passing by the merely fighting leaders of the youthful republic, he begins with Scipio Africanus, and follows with Titus, Quinctius, Flaminius, Lucius, Æmilius, Paulus, Caius Marius, Sylla, and Julius Cæsar. The work exhibits great ability, and is valuable for all classes of educated readers.

MOTHERS OF THE BIBLE. By Mrs. S. G. ASHTON, with an Introductory Essay by Rev. A. L. STONE. Boston: John P. Jewett & Co. 335 pages.

THIS volume commends itself to our favor when we notice the name of the writer of the introduction. We entertain for Mr. Stone the most profound respect. As a writer, he has peculiar merit, and in all respects he is a man. His commendation would give us confidence to indorse any work he had examined.

The "Mothers" are described with a good deal of feeling, and with power, and perhaps we might say with genius, for the author is quick in detecting character from trifling incidents. Perhaps the language is sometimes a little turgid, but the book will interest every lover of the Bible.

In the execution of the work, the publishers deserve all praise. Mr. Jewett has here given us the handsomest volume for the price we have ever seen. The paper, the typography, and the binding are all very superior, seldom equalled, and can not easily be surpassed.

MARTIN MERRYVALE, HIS × MARK. By PAUL CREYTON; illustrated. Boston: Phillips Sampson & Co. For sale by J. C. Derby, New-York.

THIS book is peculiar. The plot is peculiar, the characters, many of them, are peculiar, and their identity is sustained with uncommon ability. Little Alice at once excites your sympathy and never loses it. But she has that *peculiar gift*, spiritual vision, which is scarcely rivalled by the Foxes and their associates of real life, though her visions differ from theirs in kind. The character of "Brother Martin" is admirably done. Few volumes of this description exhibit so much talent or excite so much interest in the reader.

THE KNOW-NOTHING. (!) John P. Jewett & Co., Boston. 1855.

WE regard this as a well-written and good book. The plot is slight, but considerable ingenuity is shown in connecting it with the secret and truly Christian organization of "The Sons of Benevolence, Patriotism, and Good Deeds." Of this association, the members themselves and the readers no less are left in doubt, even to the last, whether it be of the order of Know-Nothings. On this subject, at least, those who read may claim the title as their own. It may be had of Sheldon, Lamport & Blakeman, New-York.

IDA MAY. A Story of Things Actual and Possible. By MARY LANGDON. Boston: Phillips, Sampson & Co. 1854 478 pages.

THIS volume belongs to the same style of literature as "Uncle Tom's Cabin." The heroine, Ida, is represented as a white girl who was kidnapped at an early age; but, under the protection and care of the family into which she is sold, she becomes an accomplished young lady, and is well married. The events connected with her life abound in painful incidents, but the narrative is so conducted as to give unusual interest to the story. For sale by J. C. Derby, New-York. The seventh thousand is already announced.

List of Patents Issued

FROM OCT. 3 TO NOV. 7.

Chas. P. Baily, Zanesville, improvement in railroad car seats.

Leander W. Boynton, South-Coventry, Ct., improvement in machinery for making hat-bodies.

John A. Bradshaw, Lowell, shingle-machine.

Jesse Carpenter, New-York, improvement in spinning rope and cordage.

Stephen D. Carpenter, Madison, Wis., rotary pump.

Samuel Carpenter, Flushing, improvement in machine for turning hubs, tool-handles, etc.

John D. Dale, Philadelphia, cutter-heads for planing-machines, etc.

Edwin G. Dunham, Portland, Ct., improved rock-drill.

Augustus Eckert, Trenton, Ohio, improvement in magnetic alarm-bells.

Thaddeus Fowler, Waterbury, Ct., improved sewing-pin.

Louis A. Gossin, Thibodeaux, La., improvement in the construction of sugar-making apparatus.

Benj. F. Gossin, Covington, Ky., improvement in railroad chair machinery.

John W. Griffiths, New-York, improvement in the construction of ships.

Robt. Grant, New-York, improvement in brakes for checking and starting cars.

Eben N. Horsford, Cambridge, Mass., improvement in compounds for neutralizing chlorine. English patent, May 9, 1854.

Simon Ingersoll, New-York, improvement in pawl-drills.

John Jack, Fayetteville, Ohio, improved saw-gummer.

Lyman Jennings, Erving, Mass., improvement in cans for holding liquids.

Stephen C. Mendenhall, Richmond, Ind., improvement in looms.

Elijah Morgan, Morgantown, Va., for shingle-machine.

Richard Oliver, New-York, improvement in fastening for garments.

E. Prescott, Leominster, Mass., improvement in machines for splitting horn, etc.

John P. Sherwood, Fort Edward, improved damper for ovens.

Cornelius Speer, New-York, improvement in ginning and cleaning cotton.

Henry Tongue, Nashville, Tenn., improvement in steam-engines.

Henry Volkening, New-York, polishing-machine.

Albin Warth, New-York, improvement in turning-lathes.

Irvin A. Williams, Utica, improved locomotive-lamp.

Thos. B. Woodward, Kensington, Pa., improvements in smut-machines.

Edward S. Woolsey, Astoria, N.Y., improvement in the construction of sugar-boilers.

Samuel B. Howd, Syracuse, assignor to Thomas F. Davis, James S. Leach, and Richard F. Stevens, improvement in process for the manufacture of salt.

E. B. Bigelow, Boston, Mass., improved loom for weaving cut-pile fabrics. Patented in England Dec. 31, 1851.

J. T. Barnes, Manayunk, Pa., improved power-loom.

Daniel Barnum, New-York, machinery for trimming hat-bodies.

J. D. Elliott, Leicester, Mass., new form of water-meter.

E. A. Hill, Joliet, Ill., smoke-consuming stove.

W. D. Horton, Petersburg, Ind., shoemakers' edge-planes.

B. J. La Mothe, New-York, improved iron buildings.

John H. Manny, Freeport, Ill., ante-dated June 15, 1854, grain and grass-harvesters.

Chas. Ross, Rochester, N. Y., improved grinding surface in mill-stones.

Moses Sargent, Meredith, N.H., improved roving-tube in cotton machinery.

John J. Squire, St. Louis, Mo., improved sawing-machine.

R. B. Stevenson, York, Ohio, improved water-pipe.

C. F. Thomin and Chas. Stumer, Cincinnati, Ohio, new mode of enameling iron.

Henry Wayne, Cincinnati, Ohio, joint for toilet-glass.

E. D. Williams, Wilmington, Del., and T. Tyrrell, York, Pa., improved brick-press.

John Yandell and Joseph H. Johnson, St. Louis, Mo., improvement in iron bridges.

J. H. Stimpson, Baltimore, Md., (executor of Jas. Stimpson, deceased,) ante-dated April 17, 1854, vessels for holding liquids.

John Richardson, New-York, new pen and pencil-case.

Henry F. Baker, Centreville, Ind., improvement in ploughs.

Mark S. Bassett, Wilmington, Del., improvement in sifting and bolting.

John D. Bedwell, Uhricksville, Ohio, improvement in smut-machines.

Archibald Bowen, Wadesville, Va., improvement in straw and grain separators.

Robert Boyack, Poughkeepsie, improvement in machinery for softening hemp and flax.

Samuel W. Brown, Lowell, improvement in machinery for cleaning cotton.

Patrick S. Devlan, Reading, improvement in chairs for round rails.

Geo. L. Dulaney, Long-Meadow, Va., improvement in mill-bushes.

Absalom B. Earle, Franklin, N.H., improvement in seed-planters.

Ebenezer Ford, Spring-Cottage, Miss., improvement in granaries.

Julius Herriet, New-York, improvement in gutta-purcha stereotype composition.

Jos. Johnson, Wilmington, Del., improvement in bran-dusters.

Robt. H. Jenks, Bridesburg, Pa., improvement in looms.

John G. McNarr, West-Farms, improvement in manufacturing carpets and rugs.

Gustav Frederich Palmie and Annon Herrmann Palmie, Berlin, Prussia, improvement in fire-arms.

Myer Phineas, New-York, improved pen-holder.

Edward L. Perkins, Roxbury, Mass., improvement in machinery for polishing paper.

Jas. Renton, Cleveland, improvement in making wrought-iron direct from the ore.

John H. Rauch, New-York, improved sliding pen and pencil-case.

John Richardson, New-York, improvement in pen and pencil-cases.

Josiah Shanklin, Parkersburg, Va., improvement in square, scale, level, and bevel.

Benj. Sherwood, New-York, improvements in safes.

Emile Sirret, Buffalo, improvement in fastening lamp to lanterns.

Oron W. Wade, Versailles, N. Y., improvement in stoves.

Wm. Warwick, Birmingham, Pa., improvement in mills.

Benj. H. Wright, Rome, improvement in rotary steam-engines.

Walter Bryant, Boston, Mass., assignor to J. B. Kelsey, of same place, improved air-heating furnace.

Wm. Campbell, West-Philadelphia, assignor to himself and E. W. Shippen, Philadelphia, improvement in bearings for loose pulleys.

Wm. Porter, Williamsburgh, N. Y., assignor to Joseph N. Howe, Boston, improvement in securing lamps to lanterns.

Mark R. Peerson, Georgetown, Mass., assignor to himself and Samuel Shaw, Wareham, Mass., improvement in roller-catch for self-acting mule.

Nathan Atherton, Philadelphia, improvement in steam-engines.

Abraham Bassford, New-York, improved key for tuning piano-fortes.

A. A. & G. H. Babcock, Westerly, improved press for printing in colors.

Charles Balder, New-York, knife-dye for cutting leather straps for whips.

Joseph Barker, Honesdale, Pa., improvement in grain-winnowers.

Ephraim Brown, Lowell, improved burglars' alarm.

Wm. Clemson, Boston, improvement in apparatus for tempering and flattening saws.

Harry H. Evarts, Chicago, assignor to himself and A. J. Brown, of same place, shingle-machine.

Junius Foster, Green-Point, improved burglars' alarm.

Wm. Gates, Jr., Frankfort, N. Y., machine for filling match-frames.

Robert Heneage, Lowell, improvement in tooth-clothing for picker-cylinder.

John C. Howe, Milwaukee, improvement in fire-arms.

John Harris, Lansingburg, and John B. Stoll and Galen Richmond, Troy, improvement in machinery for making rope and cordage.

Chesley Jarnagin, Clinton, Tenn., improved seats for wagons.

Richard Kitson, Lowell, improvement in machinery for picking cotton and other fibrous substances.

John M. Krider, Newton, Stephensburg, Va., improvement in tailors' measuring instruments.

Samuel Lenher, Philadelphia, attachment to syphon.

Warren and Charles F. Lillibridge, Zanesville, improved tailors' measure.

James E. McConnell, Wolverton, England, improvement in railroad car axles.

Daniel Moore, Williamsburgh, improvement in cartridges for breech-loading fire-arms.

Daniel Moore, Williamsburg, improved powder-flask for breech-loading guns.

Vincent Palen, Portsmouth, Va., improved arrangement in mechanism for sawing off piles under water.

John Richardson, New-York, improved pen and pencil-case.

Elhanan W. Scott, Lowell, machine for manufacturing mast-hoops.

Wm. J. Stevenson, New-York, improved soldering furnace.

Samuel R. Thorp, Batavia, improvement in odometers.

Julius Thompson, Middleboro', N. Y., improvement in odometers.

Samuel Vansyckel, Little-York, N. J., improvement in grate-bars.

R. A. Wilder, Schuylkill-Haven, improved arrangement in spark-arresters for heating feed-water.

S. R. Wilmot, New-Haven, water-meter.

Alonzo S. Woodward, Lowell, and Benj. F. Bartlett, Pepperell, Mass., improvement in machinery for cutting rags for making paper.

William Sewall, Brooklyn, improvement in surface-condensers. Patented in England, Jan. 13, 1854.

D. C. Ambler, New-York, improvement in sewing-machines.

John B. Brennan, Mount-Vernon, N. Y., improvement in locks.

Albert Boughton, Malone, N. Y., new machine for polishing stone.

R. S. Craig, Cincinnati, Ohio, new form of trap for catching wild animals.

Reuben Daniels, Woodstock, Vt., improvement in water-wheels.

Ferdinand Davison, Petersburg, Va., stone-drilling machine.

Jacob Green, Philadelphia, improved glass-furnace.

Samuel Gumaer, Aurora, Ill., corn-sheller.

S. S. Hawthorne, Orange, Ct., improved form of buckle.

A. K. Hay, Winslow, N. J., improved glass-furnace.

H. S. Higgins, Graham, Ind., machine for manufacturing barrels.

Thos. Kendall, San Francisco, bottle-stoppers.

Joseph Leeds, Philadelphia, improved furnace for heating buildings.

E. E. Marcy, New-York, improved method of vulcanizing gums.

W. N. Martin, Bristol, R. I., new form of coal-hod.

I. W. McGaffey, Philadelphia, improved potato-digger.

Barnet McKeage, Accatuik, Va., sawing bolts for staves.

E. T. Miller, Boston, improved bomb-shell or grenade.

Geo. Miller, Providence, R. I., improved leather-banding for machinery.

Edmund Morris, Burlington, N. J., new form of slate-frame.

M. P. Norton, Tinmouth, Vt., brakes for railroad cars.

Dewey Phillips, Shaftsbury, Vt., improved farm-gate.

E. W. Rider and J. Murphy, New-York, improved method of desulphurizing gutta-percha and other elastic gums.

E. W. Roff, Newark, N. J., new method of cutting tenons on blind-slats.

Chas. Rumley, Rochester, N. Y., steam-engine valves. Do., improved rotary steam-engine.

Isaac Searles, Newark, N. J., machinery for making hat-bodies.

R. M. Selleck, New-York, harness-saddles.

Jas. Slater, Macon, Geo., new mode of operating circular saws.

J. P. Smith, Hummelstown, Pa., corn-shellers.

B. H. Washington, Hannibal, Mo., improved mode of directing air-blast in furnaces.

Elbridge Webber, Gardiner, Me., machine for making shovel-handles.

Charles Wilson, Springfield, Mass., improved lock.

Wendell Wright, New-York, improved lock for fire-arms.

S. T. Thomas and Eliza Ann Everett, adm'x. of Edward Everett, of Lawrence, Mass., improved loom-beam.

John Jenkins, Monroe, N. Y., assignor to Roe Horton & Co., of Chester, N. Y., carriage-lifting jacks.

John P. Avery, assignor to J. B. Bromley, of Norwich, Ct., stone-dressing machine.